



# UNIVERSITY NEWS

## Science Congress Special

MONTHLY OF HIGHER EDUCATION & RESEARCH • January 1975 Re. 1.25



DR. RAVI PRAKASH



DR. HARSH VARDHAN



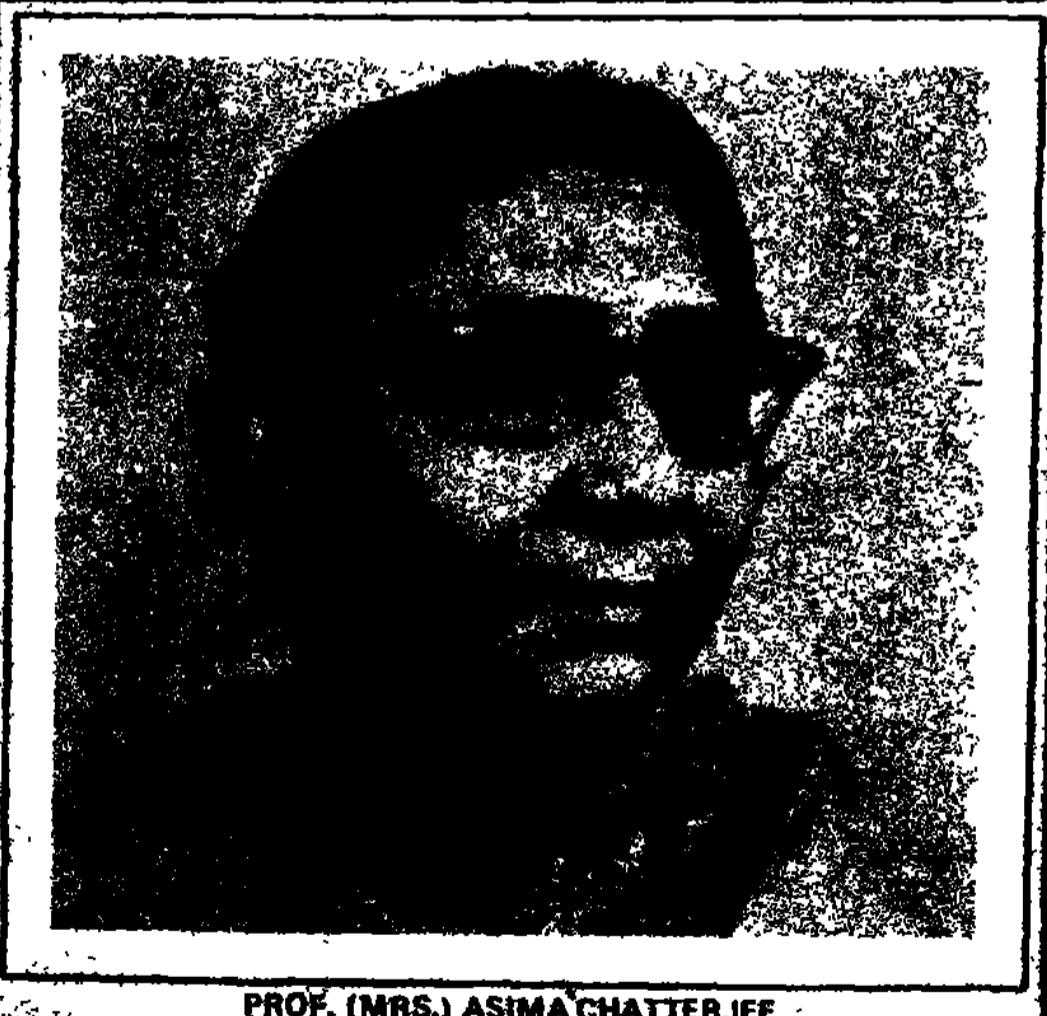
DR. S. R SINHA



DR. ASOK K. GHOSH



PROF. I. C. PANDE



PROF. (MRS.) ASIMA CHATTERJEE



DR. B. N. SINGH



DR. CHANDI CHARAN DEB



# INDIAN SCHOOL OF MINES

DHANBAD-826004

## WANTED

1. One Professor (in Senior Scale). For TATA STEEL Chair in Open-cast Mining in the Department of Mining for 3 years to start with, likely to continue. Qualifications: Essential: (1) A degree (or equivalent qualification) in Mining or Civil Engineering, with at least 60% marks in the qualifying examination. (2) Post-graduate qualifications or a First Class Mine Managers Certificate of Competency or technical publications of high merit in the field of specialisation. Desirable: (3) Fellowship of a professional institution of standing.

2. One Professor (for Mechanical Engineering) in the Department of Engineering and Mining Machinery. Post permanent. Vacancy will arise around June 1975. Qualifications Essential: (1) A degree (or equivalent qualification) in Mechanical Engineering, with least 60% marks in the qualifying examination. (2) Post-graduate qualifications or Fellowship of a professional institution of standing or technical publication of high merit in the field of specialisation. Desirable: (3) Experience in installation/maintenance/inspection of mining machinery.

(Those who had applied in response to the advertisement of Aug. 16, 1973 need not apply again).

3. One Professor in Industrial Engineering. Post temporary at present, but likely to continue. Qualifications. Essential: (1) A good post-graduate degree in Industrial Engineering and/or Operations Research. Desirable : (2) Experience of relevance to the mineral industries.

4. One Visiting Assistant Professor in the Department of Mining. U.G.C. Post. currently for period of about four years to start with, likely to continue. Speciality Open-cast Mining or Mine Planning. Qualifications: Essential: (1) A degree (or equivalent qualification) in Mining Engineering, with at least 60% marks in the qualifying examination. Desirable: (2) Post-graduate qualifications or a First Class Mine Managers Certificate of Competency or technical publications of merit in the field of specialisation. (3) Corporate membership of a professional institution of standing.

5. One Lecturer in the Department of Mining. Lien vacancy at present. Essential: (1) A degree (or equivalent qualification) in Mining with at least 60% marks in the qualifying examination. Desirable: (2) Post-graduate qualification or First Class Mine Managers Certificate of Competency or technical publications in the field of specialisation. Candidates holding the First Class Manager Certificate of Competency shall be eligible to a start of Rs. 720/- or higher in the pay scale.

6. One Lecturer (for Mechanical Engineering) in the Department of Engineering and Mining Machinery. Post temporary but likely to continue. Qualifications Essential: (1) A degree (or equivalent qualification) in Mechanical Engineering, with at least 60% marks the qualifying examination. Desirable: (2) Post-graduate qualifications or technical publication in the field of specialisation (3) Experience in installation and maintenance of mining machinery.

7. One Lecturer (for English) in the Department of Languages and Humanities. Qualifications: Essential: (1) Master's degree in English with at least 60%

marks in the qualifying examination. Desirable: (2) Awareness of the needs and problems of teaching English to students of technology.

Experience: Should be in research/teaching/industry including technical and scientific organisations, with special knowledge/experience in the specified speciality, if any. Length of experience should be:

\*about 15 years in the case of Professor in senior scale, including at least 10 years in positions of high responsibility.

\*about 10 years in the case of Professor in regular scale, including at least five years in positions of high responsibility.

\*about six years in case of Assistant Professor, including at least three years in positions of responsibility.

\*about three years in case of Lecturers.

Holders of additional post-graduate qualifications will be given some credit for the period spent in acquiring the said qualifications.

Age: Normally not more than 30 years in case of Professor in senior scale, 45 years in case of Professor in regular scale, 40 years in case of Asstt. Professor and 35 years in case of Lecturer. Relaxable for departmental candidates and for those who are otherwise well qualified.

\* GENERAL: Applicants should have uniformly good academic records and interdisciplinary approach, and aptitude for developing course material. They should send, along with their applications, a list of their publications (with full publication references) and reprints of some selected papers as also copies of course material already prepared, if any.

### Pay Scales:

PROFESSOR: Rs. 1600-1800 (Senior Scale) and Rs. 110-1600 likely to be merged into a revised Pay-scale of Rs. 1500-2500.

ASSISTANT PROFESSOR: Rs. 700-1250 likely to be revised to Rs. 1200-1900.

LECTURER: Rs. 400-950 likely to be revised to Rs. 700-1600. Besides pay, the posts carry allowances at Central Govt. rates. Higher initial salary in the relevant pay-scales may be granted to specially qualified and experience candidates. Applications in the prescribed form (obtainable from the Registrar, Indian School of Mines, Dhanbad-826004, on receipt of a self addressed envelope of the size 29 cm x 12 cm affixed with postage stamps of the value Rs. 1.75), should reach the Registrar on or before January 31, 1975. Those in service should apply through their employers. If the application through proper channel is likely to be delayed, an advance copy may be submitted, but in such a case the original application must reach the Registrar within 15 days of the aforesaid date. The school reserves the right to consider cases of contact candidates whose names have been suggested by experts even though they have not formally applied for the post. Applications should be accompanied by a Money Order receipt for a sum of Rs 8/- (Rs. 2/- for scheduled caste/tribes candidates) in token of remittance of application fee to the Registrar. First class rail fare for interview is admissible. dawp 811-(8)/74.

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

*Editor : ANJANI KUMAR*

*A view*

## 10+2+3 Pattern of Education

G.S. MAHAJANI

THE State Level Committee set up in Maharashtra consisting of, among others, all the Vice-Chancellors in the State, has made the following recommendation in its report on the 10+2+3 pattern of education:

"After careful consideration of the matter and in the light of the discussion which took place at our meetings, we recommend that there should be two years' pass course or general course as may be decided by the academic authorities of the universities, and one year's Honours Course subsequent to Pass/General Course and that the first two years in the University should be common to the Honours as well as to the Pass/General Course."

To amplify this recommendation so as to avoid confusion the formula 10+2+3 should be read as Matric+2+(2+1). For, while in some States, 10 years' schooling means Matric (School Leaving Examination), in some other States (to wit Maharashtra), 11 years schooling means Matriculation Examination. Of course, after 1975 uniformity will be reached and 10 will mean Matriculation stage all over the country.

We, Vice-Chancellors, feel that the formula Matric+2+(2+1) be accepted. This implies that a candidate should be enabled to have a Pass degree or a General Degree at the end of four years after the Matriculation. Those who want an Honours Degree will study for five years after Matriculation. This arrangement is similar to what some Universities have done for the LL.B. Course. Though the Bar Council recognizes a three-year LL.B. Degree, some Universities have instituted General LL.B. Degree after the two years' study. There is nothing academically unsound in having a first (Pass) Degree after 4 years from the Matriculation. The present pattern of the Bombay University and those in the U.P. is exactly the same.

Again, statistics show that some 85 per cent stop their education with the first degree

(Continued on page 13)

# 62nd Science Congress

The 62nd annual session of The Indian Science Congress Association is being held in Delhi this year from January 3 to 7.

## About the Sectional Presidents whose photographs appear on the cover page....

**Prof. (Mrs.) Asima Chatterjee, General President, 62nd Indian Science Congress, to be held in Delhi from January 3 to 7, 1975,** is Khair Professor and Head of the Department of Chemistry, Dean of the Faculty of Science, Calcutta. Born in 1917 she had her school, college and university education in Calcutta. With a First Class Master's Degree in Chemistry, she was awarded D.Sc. (Doctor of Science) Degree by the University of Calcutta in 1944 on the merit of a thesis on the Chemistry of Plants Products and on Synthetic Organic Chemistry.

Prof. (Mrs.) Chatterjee started her teaching career at the Lady Brabourne College, Calcutta, in July 1940, where she served as Professor and Head of Department of Chemistry till 1954 when she joined as Reader in Chemistry in the University College of Science. She was appointed Khair Professor of Chemistry, the position she holds now, in January, 1962 at the aforesaid college. During the tenure of service at the Lady Brabourne College, she also served as Lecturer at the University College of Science, Calcutta.

Having been actively engaged in researches since 1937, covering a period of more than three and half decades, Prof. (Mrs.) Chatterjee has made significant contribution in the fields of alkaloids, terpenoids, coumarins, organic analytical chemistry and reaction mechanism. Mechanism of Hydramine fission studied by her has been incorporated in text books for Undergraduate students (B.Sc. Pass and Honours). A number of physiologically active compounds have been isolated by her from several plants of India (e.g *Rau-*

*wolfia* species *Vinca* species and *Aegle marmelos*, etc.). and many of them find extensive clinical applications all over the world. The isolation of a novel antiepileptic drug, marsilin from *Marsilea minuta* is also worth mentioning. Her research work has also been well documented by more than two hundred publications—in different foreign and Indian journals.

She had been the recipient of Nagarjuna Prize and Medal, Premchand Roy hand Studentship, Mount Gold Medal, Jogmaya Devi Gold Medal, Sir P C. Ray Research Scholarship, and a number of other university medals and prizes; given S.S. Bhatnagar Award in 1961.

She had visited several countries many a time to take part in symposia, deliver lectures and attend conferences. She acted as Chairman in the symposium on Phytochemistry held under the joint auspices of UNESCO and Federation of Malaya at Kuala Lumpur in 1957; presided over the Natural Products Section of the IUPAC International Congress, Paris (1957); presented papers and acted as Chairman in the IUPAC symposia held in Zürich, 1955; Australia (1960) and Riga, USSR, 1970. On special invitation she lectured in the University of Manchester in 1970; University of Cardiff (1971); delivered lecture in the Phytochemistry Symposium held in the University of Hong Kong, 1961; acted as co-Chairman at the IUPAC Symposium in New Delhi in 1972.

A Fellow of Indian National Science Academy, Prof. (Mrs.) Chatterjee is a member of Indian Chemical Society; Indian Asso-

ciation for the Cultivation of Science; Indian Science News Association; Sigma XI (USA); Chemical Society, London; Chemistry & Industry, London; Biological Society of India; Member of State Planning Board; and West Bengal Phytochemical and Pharmaceutical Development Corporation Ltd.

Prof. (Mrs.) Chatterjee is now Chairman of Chemical Research Committee, C.S.I.R., and President, Bangiya Bijnan Parishad.

She has written the following books—*Bharater Banousadhi* (written at the invitation of Visva Bharati); *Saral Medhyanic Rasayan*, a book on Chemistry for Secondary School students (written at the invitation of President Bijnan Parishad). She has edited and written *Bharatiya Banousadhi* (originally compiled by Dr K. Biswas) in six volumes (published by the University of Calcutta). Also, she has contributed chapters in a number of scientific books, of which particular mention may be made of the following two chapters: (i) *Rauwolfia* Alkaloids in 1952, and (ii) Recent Development in the Chemistry and Pharmacology of *Rauwolfia* Alkaloids in 1956, in Zechemister's Fortschritte der Chemie Organischer Naturstoffe, published by Julius Springer, Vienna.

Prof. (Mrs.) Chatterjee has held several offices of importance at the Indian Science Congress Association of which she was elected General President for the year 1974-75. Earlier she had been its General Secretary and Treasurer for a term of three years each. Incidentally, she is first lady General President of the Indian Science Congress Association.

**Prof. C. V. Subramanian, President, Section of Botany, 62nd Indian Science Congress** is distinguished for his work in mycology and plant pathology. The work for which he is internationally known and respected has been done almost entirely in India and he strongly believes that a great deal of good and useful work can be done with simple tools and modest funding.

Born in 1924, he graduated from the Presidency College, Madras with a first class first Honours in Botany in 1944 and won the coveted Pulney Andi Gold Medal and the Fyson Prize. His Ph. D. (1948) and D.Sc. (1957) degrees are both from the Madras University. Starting his career as Senior Lecturer in the Madras University in 1951, he had the distinction of being the first to hold the first ever Chair in Plant Pathology in our country, at the I.A.R.I., New Delhi. He organised the Botany Department of the Rajasthan University at Jodhpur. He moved to the Madras University in 1964 as Professor in the Centre for Ad-

vanced Study in Botany, and now heads that Centre.

He has established an active school of research in taxonomy and biology of fungi. His most significant contributions are on taxonomy of Fungi Imperfecti, especially Hyphomycetes. His pioneering and systematic exploratory studies led to the discovery of many interesting new genera and species in naming which he has largely used Sanskrit roots. His studies and original interpretations of conidiogenesis based on cell wall relationships have led him to formulate a terminology built on new concepts. He is also well known for his work on soil mycology and soil-borne plant diseases, the systematics, distribution and ecological behaviour of soil Fusaria, and the nutritional physiology, mainly nitrogen utilization, of plant pathogenic species.

He has published over 100 original papers and a monograph on Hyphomycetes. He is a Fellow of the Indian Academy of Sciences and of the Indian

National Science Academy; recipient of the Shanti Swarup Bhatnagar Memorial Award for Biological Sciences, 1965, and the Birbal Sahni Medal of the Indian Botanical Society, 1972; past President, Indian Botanical Society; Vice-President of the International Mycological Association; Corresponding Member for India, 1st International Mycological Congress, Exeter; British Council Visitor to Britain on several occasions and Visiting Professor, University of Bristol, 1968; Convener, First International Symposium on Taxonomy of Fungi, Madras, 1973. Professor Subramanian has chaired Sessions at the Edinburgh and Seattle Botanical Congresses and the 2nd International Symposium on Marine Mycology, Bremerhaven, 1972.

He delivered a keynote address at the Kananskis Conference on Fungi Imperfecti in 1969. He has been invited to organize and chair the Symposium on fungal taxonomy at the International Botanical Congress at Leningrad in 1975.

**Dr. Ravi Prakash, President, Section of Zoology and Entomology, 62nd Indian Science Congress** is at present Vice-Chancellor of Bhopal University. Born on 1st November 1923 at Mathura in U.P., he received his early education at Etah in U.P. After graduating from Maharaja's College, Jaipur, he joined St. John's College, Agra and passed his M.Sc. in 1947. He received his Ph. D. in (1950) and D.Sc. (1957) from Agra University. He served as lecturer in D.A.V. College, Kanpur (1947) and Govt. College, Ajmer (1947-53), as Professor of Zoology at Hamidia College, Bhopal in 1954. After serving as Principal of Science College at Raipur, Gwalior & Indore joined Bhopal University as Vice-Chancellor.

Main research of Dr. Prakash is on conducting tissue of the

heart of vertebrates. He has been credited with the discovery of specialized impulse initiating and conducting tissue in the heart of lower vertebrates. According to Dr. Prakash the impulse initiating and conducting structures of the heart of birds and mammals are not neomorphic structures but have evolved from and are further specializations of similar tissue existing for the purpose in the heart of lower vertebrates.

Dr. Prakash has been a teacher and research worker of outstanding merit. He has been the Dean, Faculty of Science, Raipur, Gwalior and Indore Universities. At Indore he established a new department of Life Sciences.

It is due to his efforts that a separate faculty of Life Sciences

has been started in all the Universities of Madhya Pradesh. Dr. Prakash is also the first President of Madhya Pradesh Vigyan Academy an Association of students and teachers devoted to study and research .

Dr. Prakash visited various Universities in U.K. in 1959. He had been to Boulder, Colorado in U.S.A. to attend First International Congress on Systematic and Evolutionary Biology. There he was also the guest of the State University College, Fredonia, Trinity College, Washington and several other Colleges.

Recently he has been to Moscow, under Indo-Soviet Cultural Exchange Programme to attend First International Theriological Congress and visited a few universities and Institutes of Zoology in the U.S.S.R.

**Dr. Harsh Vardhan, President, Section of Engineering & Metallurgy, 62nd Indian Science Congress** is Director, Central Scientific Instruments Organisation, Chandigarh. Born on 12th April 1923, he did his B. Sc. (Hons. School) and M. Sc. in Physics from the Panjab University. Immediately after, he was a Research Fellow in a CSIR research scheme on 'Diamond Technology' under Prof. P. K. Kichlu, D. Sc., F.N.I. He designed and fabricated machines for cutting, grinding and polishing diamonds. He made several diamond tools and worked on other semi-precious stones. His work on the 'Determination of the Crystallographic axes of Diamond' using back reflection x-ray patterns was well reviewed in Indian and foreign circles.

In 1950, he joined the Defence Science Organisation. Here he worked on defence problems in the field of applied and industrial physics. From here, in 1953 he went abroad for higher studies. At Cornell University, USA, he obtained a Doctorate in Engineering Physics, a rare combination which provided him with a wide foundation in modern physics, machines shop technology and industrial electronics. This uniquely equipped him for research and development in the field of applied physics and instrument technology.

Back to the Defence Science

Laboratory he headed the Instrumentation Group in the Division of Applied Physics. A number of instruments for Defence research were made. Besides this, he established a comprehensive workshop, a photographic section, drawing office and glass blowing shop. He also undertook the development of high speed photographic equipment and setting up of country's first shock tube, both being of importance in defence research. The high speed camera designed and fabricated by him won him the highest award from the Inventions Promotion Board in 1966. The shock tube is working at the Defence Science Laboratory.

Also besides many other items, the technique of making replica diffraction gratings was developed in the country for the first time. This was later extended for commercial production.

His services were sought for in 1963 for the Solid State Physics Laboratory while it was being established. There, besides his scientific assignment, he planned and set up its various laboratories and a modern workshop.

He established the techniques of photolithography and mask making for thin film integrated circuits. Several thin film circuits, such as an audio-amplifier, a radio receiver, the size of a cigarette carton, multivibrator and oscillator etc. were made by

his team. A special laboratory for SiC work was comprehensively equipped and clean room facilities were created. These are at present the best such facilities in the country. Techniques of masking, opening of windows, diffusion, coating and attaching the leads etc. to desired dimensional specifications were firmly established by his team. Several solid state devices were developed and supplied to the users. Interstitial images, and complicated dial scales were produced for the first time in the country. Techniques for manufacturing, button type sealed Ni Cd cells, Cds photo-conductors etc. were developed.

In February 1973, Dr. Harsh Vardhan was appointed as Director of the Central Scientific Instruments Organisation, Chandigarh, a national laboratory under the Council of Scientific & Industrial Research.

He has about 30 research papers to his credit. He is member of a number of societies, committees and professional bodies which include Institution of Electronics and Telecommunication Engineers, Fellow of the Optical Society of India, Member of the Electron-microscope Society of India, Indian Vacuum Society, Director on the Board of Directors of National Instruments Limited and Vice-President of the Instrument Society of India and on the Academic Councils of several Universities etc.

**Dr. Chandcharan Deb, President, Section of Physiology 62nd Indian Science Congress**, was born at Uttarpara, West Bengal. He obtained his M.Sc. and Ph. D. degrees and also the Griffith Memorial Prize, Calcutta University, from the Presidency College, Calcutta. He was awarded a Post-Doctorate research fellowship by the National Research Council, Ottawa, and later by the McGill University, Montreal. Dr. Deb joined the University of Calcutta in 1957.

From 1964 to 1967 he acted as Research Associate, Sini Hospital and also Fellow in Surgery, Johns Hopkins University at Baltimore. At present he is Reader in Physiology, Calcutta University. He visited five different universities in U.K. as a Visiting Scientist, British Council, London, in 1973. Dr. Deb has also attended a number of International Conferences.

He is working for the last 25 years on Reproductive Biology,

Endocrinology, Histochemistry, Physiology of Hibernation and allied subjects. He has more than one hundred publications in well-reputed scientific journals, some of which have been cited in books.

Dr. Deb has established a school of Histochemistry and Reproductive Biology at the Calcutta University. He is connected with the Physiological Society of India and the Indian Science Congress for quarter of a century.

**Dr. B. N. Singh, President, Section of Statistics, 62nd Indian Science Congress,** is Director and Head of Statistics Department, Indian Standards Institution and is known for his contributions in the fields of statistics, quality control, standardization, reliability and operational research. His work on the applications of statistical methods, quality control and other allied techniques to industries have been of a pioneering nature.

Born on 8th June, 1929, Dr. Singh had his education at Varanasi and Delhi. He took his M.Sc. degree in Mathematics from Banaras Hindu University in 1949. He then received two years' Post-graduate training in Statistics at the Indian Council of Agricultural Research (ICAR), New Delhi. He submitted a thesis on "Certain Probability Distribution Arising from a Sequence of Observations" and was awarded the Diploma by ICAR. He was also awarded the Randhawa Gold Medal by ICAR for the Thesis and for being the best student of the year. He got the Ph.D. degree in Statistics for his Thesis—"Contribution to Distribution-Free Tests".

Dr. Singh started his career by joining the Department of Mathematics and Statistics, Banaras Hindu University in 1951. While at B.H.U., he used to deliver special lectures on Statistics at the Institute of Social Sciences, Kashi Vidyapith, Varanasi and assisted the Institute in the conduct of a socio-economic survey. He then moved to the Indian Standards Institution in 1955. He became Head of the Statistics Department in 1960 and Director in 1967.

Dr. Singh has been organizing and conducting training programmes in statistical quality control in different sectors of industries with a view to enabling them to introduce quality control in their plants and produce quality goods at an economical level. These programmes have led to the creation of a nucleus of SQC practitioners capable of tackling the quality and cost problems in industries. He is also to organise an international training programme in statistical quality control for the developing countries of Asia, Africa and Latin America.

He had visited a large number

of industries and organizations in United States, United Kingdom and Japan in 1961. He has been a delegate to a number of meetings of the technical Committees and sub-committees of the International Organization for Standardization (ISO) on Sampling of Iron Ores and Inter-Conversion of Values at Tokyo (1963), Paris (1966), Copenhagen (1966), Philadelphia, USA (1969), Ottawa, Canada (1970), London (1971), Kiruna, Sweden (1973) and Sydney (1974).

He also visited the Technical University, West Berlin and University of Maize, West Germany for technical discussions and talks on quality control and standardization in May 1969.

He has published over 40 research and technical papers in the national and international journals of repute.

He has recently been selected by United Nations Development Organization (UNIDO) as a UN Expert on Quality Control and Inspection to help the Government of Barbados in the introduction and development of quality control in Barbados.

**Dr. B. K. Chakraborti, President, Section of Medical and Veterinary Sciences 2nd Indian Science Congress,** Principal-Superintendent and Professor of Physiology, Medical College, Calcutta, was born on 1st March, 1920. Passing the Matriculation Examination of the Calcutta University in the 1st Division in 1935 he entered Presidency College Calcutta and continued till 1941 from where he passed I.Sc. in 1st Division, B.Sc. (Hons) in Physiology First in 1st class and M.Sc. in Physiology 1st in first class. Entered Medical College of Bengal in 1939 and graduated in 1946.

He is Recipient of University

Gold Medal and Monmatha Nath Bhattacharya Gold Medal.

Was Editor of the Medical College Magazine in 1944-46. Blue holder in Aquatic of Calcutta University, Medical College and Bengal.

Served as a Lecturer in Physiology, Presidency College, Calcutta. Asstt. Professor Physiology, Assam Medical College, Dibrugarh, Lecturer, K. G. Medical College, Lucknow, Demonstrator, Asstt. Professor and Associate Professor of Nilratan Sircar Medical College, Calcutta, Professor and Head of the Dept. of Physiology, Medical College, Calcutta in which post he is continuing in addition to Vice-Princi-

pal of the College. Principal-cum-Superintendent, Nilratan Sircar Medical College Hospitals, State Family Planning Officer, Govt. of West Bengal.

Engaged in teaching and research since 1946, he has published about 60 papers of which methods on non-esterified fatty acid estimation, predictability of myocardial infarction and antifertility effects of *Artaberry's odoratus* are well known.

Member of various learned societies, he visited United Kingdom and stayed there for one year as a W.H.O. Fellow to acquaint with the teaching and research methods.

**Dr. T. D. Biswas**, President, Section of Agricultural Sciences, 62nd Indian Science Congress, was born in 1920 in Ichapur-Nawabgunj, near Barrackpore in West Bengal. After a distinguished academic career at the University of Calcutta, he received the M.Sc. degree in 1943 and entered the profession of soil science research. He belonged to the "Calcutta School of Soil Science" led by Dr. J. N. Mukherjee and had the privilege of research guidance under Prof. R. P. Mitra and the late Dr. B. Chatterjee.

Dr. Biswas's association with the Indian Agricultural Research Institute, where he now heads the Division of Soil Science and Agricultural Chemistry, began in 1946. He has been variously

employed in the Institute as Research Assistant, Assistant Soil Survey Officer, Soil Scientist and as Professor. During the twenty seven years he has worked at the Institute, he has significantly contributed to varied aspects of his professional field, including micronutrients in soil, soil genesis, and soil physics. His eighty odd scientific publications are a record of the very wide range of his interests and output.

His pioneering work on manganese in soils of India, which attracted the attention of soil scientists the world over, formed the subject of a thesis which enabled him receive the degree of Doctor of Philosophy of the Calcutta University in 1952. From micronutrients to soil genesis and

classification was natural step, and he has made significant contribution to our understanding of the formation and nature of major soils of India, particularly catenary and black soils.

He has been associated with Indian Society of Soil Science since 1952 as Joint Secretary from 1952 to 1959 and as Secretary from 1960 and it devolves to his credit that the Society has risen to its present eminence.

The International Symposium on Soil Fertility Evaluation in New Delhi in 1971 bears a testimony to his organizational ability. The journals and several bulletins of the Indian Society of Soil Science will remain a record of his faithful service in the cause of soil science in India.

**Dr. Asok K. Ghosh**, President, Section of Anthropology and Archaeology, 62nd Indian Science Congress, completed his formal education at the Department of Anthropology, University of Calcutta where he finished up with a first in 1959, securing the Calcutta University Gold Medal and the S. C. Mitra Memorial Medal. He joined his own Department as a Calcutta University Research Scholar in 1960. His doctoral dissertation on the Palaeolithic Culture of Singhbhum—a study on cultural change and ecological adjustment of man during the Pleistocene epoch, carried out under Professor D. Sen, was accepted in 1964. In 1966 he was awarded the Premchand Roychand studentship from the University of Calcutta for his work on the Pleistocene Culture of West Bengal.

His work soon secured international recognition and he was specially invited to participate in the VIIth International Congress of Quaternary Association at Boulder-Colorado in 1965. Afterwards, he also participated in the VIIIth and IXth INQUA Congresses and along with these he was invited as a specialist to contribute his ideas in the INQUA-UNESCO sym-

posia on '*Homo sapiens*' and 'Early man, his material culture and natural environment' held at Paris (1969) and Christchurch (1973) respectively. Dr. Ghosh has been a member of the Permanent Council of the International Union of Prehistoric and Protohistoric Sciences and he attended the VIth and VIIth Congresses of the Union at Prague (1966) and Belgrade (1971). In the VIIIth Congress of the Union, to be held in Nice (1976), he has been nominated as the Director of a colloquium on 'Le Palaeolithique inférieur et moyen en Inde, en Asie Centrale, en Chine et dans le Sud-Est Asiatique'.

Dr. Ghosh has been a Foreign Fellow of the American Anthropological Association and of the Royal Anthropological Institute of Great Britain. He has been nominated as a member of the Istituto Italiano di Preistoria e Protostoria, Working Group of Scientific Committee of the Pacific Science Association, Executive Committee of the Far Eastern Prehistory Association, Association Internationale pour L'Etude des Religions Préhistoriques, and other International Organizations. The latest feather in Dr. Ghosh's bristling cap

has been added with his nomination as a member of the INQUA Commission on Palaeoecology of Early Man, and he is the President of the sub-commission on south and south-east Asia.

Dr. Ghosh served as Sectional Chairman, Palaeolithic of South and Southeast Asia, held at McGill University in 1973 under the auspices of the IXth International Congress of Anthropological and Ethnological Sciences. For the Xth Congress of Anthropological and Ethnological Sciences which will be held in India in 1978.

Dr. Ghosh is teaching in the Department of Anthropology of the University of Calcutta since 1963, and now he is a Reader in Anthropology. He has carried out intensive field research in eastern India, the Narmada Valley, Madras and Kashmir with a view to collecting the relevant data on *Early Man*, his culture and prevailing environmental conditions.

He is author of upward of 80 important papers which came out in different international journals of India and abroad. Dr. Ghosh is also associated with a number of journals.

**Prof. P.T. Narasimhan, President Section of Chemistry, 62nd Indian Science Congress**, was born on July 28, 1928 in Cuddalore, Tamil Nadu. He received his Bachelor's degree (First Class) in Chemistry from Madras University at the Madras Christian College, Tambaram in 1947 and obtained his Master's degree (by research—title of thesis: "Studies in Dipole Moments") in 1951. He then joined the Physics Department, Indian Institute of Science, Bangalore and carried out research work and obtained his Ph.D. in 1955 in Chemistry from the University of Madras for his thesis on "Studies in Dielectrics".

During 1955-56 he was an Imperical Chemical Industries Post-Doctoral Research Fellow at the Indian Institute of Science, Bangalore and carried out research work on infrared spectroscopic studies of chemical bond properties. He then joined as an Instructor (1957-58) and later became an Assistant Professor (1958-59) at the Kedzie Chemical Laboratory, Michigan State University, East Lansing, Michigan, U.S.A. and carried out research work in high re-

solution Nuclear Magnetic Resonance (NMR) spectroscopy. Subsequently, he was Assistant Professor in the Chemistry Department of University of Illinois (1959-60), Urbana, Ill., U.S.A. and Columbia University (1960-61), New York, U.S.A. and carried out research work in magnetic resonance and theoretical chemistry. On return to India he joined the Physics Department (1962-63) of the Indian Institute of Technology, Kanpur (IIT/K) and was promoted to Associate Professorship in the Chemistry Department (1963) of IIT/K. In 1965 he was made a full Professor in the Chemistry Department of IIT/K. In 1969 he was invited to the Tata Institute of Fundamental Research, Bombay as a Visiting Professor.

Professor Narasimhan's areas of specialization are theoretical chemistry, nuclear magnetic resonance (NMR), electron spin resonance (ESR), and nuclear quadrupole resonance (NQR). His contribution to the analysis of high resolution NMR, magnetic anisotropy of chemical bonds, molecular orbital and valence bond theoretical studies of nu-

clear spin couplings and electronic structure asymmetry parameters in the electric field gradients of spin 3/2 nuclei in NQR and spin densities and linewidth effects in ESR are well-known. Other important contributions of Professor Narasimhan are his studies on Hartree-Fock-Slater wave functions and electrical and magnetic properties of atoms and ions. His recent work includes localization of molecular orbitals, NMR of oriented molecules, quadrupole shielding factors and NQR instrumentation. Professor Narasimhan's scientific papers appear in various Indian Journals.

Professor Narasimhan has participated in several international conferences and has presented invited papers at these conferences and also chaired technical sessions. He is the Secretary and one of the founder members of the Association of Magnetic Resonance Spectroscopists, India.

He is a Fellow of the Indian Academy of Sciences and a Fellow of the National Sciences Academy. He is recipient of the Shanti Swarup Bhatnagar Prize (1970) for Chemical Sciences.

**Life Sketch of Prof. I.C. Pande, President, Section of Geology & Geography, 62nd Indian Science Congress** (born in 1914.) received his M. Sc. degree from the Banaras Hindu University in 1945; worked under late Prof. H. H. Read, F.R.S. and obtained Ph. D. degree from the London University in 1954 and a diploma from the Imperial College of Science and Technology, London. Specialized in Structural Petrology, Metamorphic Geology and Himalayan Geology. Started his career as a Lecturer in Banaras Hindu University in 1943. Joined the Panjab University as a Professor in Himalayan Geology in August, 1964. Took over as the Head of the Geology Department and Director of the Centre of Advanced Study in Geology, Panjab University,

Chandigarh, in February, 1966.

Apart from teaching and administrative assignments, he devoted much of his time in the furtherance of research activities of the Centre of Advanced Study in Geology. He has to his credit 84 research papers published in various outstanding journals of the country and abroad. Translated an English book entitled "Sedimentary Rocks" by F. J. Pettijohn into Hindi. His

He is member of various organizations like Geological Cells of Punjab, Himachal Pradesh and Haryana; Governing body and other Committees of the Wadia Institute of Himalayan Geology; various Committees of Government of India and Geological Survey of India; Indian National Committee for International Geological

Correlation Programme; Boards of Studies of various universities in India; Educational Planning Board of Kumaun University, Nainital; Various learned societies in India and abroad and Fellow of the Geological Society of London. Recently, he has been nominated as Fellow of the Panjab University.

He has visited the United Kingdom, Switzerland, Germany, U.S.S.R., Czechoslovakia, U.S.A., and Canada. In U.K. U.S.S.R. and under collaboration programme he delivered a series of lectures on *Himalayan Geology*. He has had the unique honour for acting as Chairman of the 23rd International Geological Congress held at Praha (Czechoslovakia) in 1968. Attended the 24th Session of the I.G.C. held at Montreal (Canada) in August, 1972.

**Dr. A. Edwin Harper, Jr.** President, Section of Psychology and Educational Sciences, 62nd Indian Science Congress was born in Punjab on Jan. 3, 1919. After completing his high school at Woodstock School in Mussoorie, he entered Princeton University which awarded him its B.A. degree in psychology, *Summa Cum Laude*, in 1941. He then did his M.A. at the State University of Iowa, studied theology for two years in New York, and enrolled at Teachers College, Columbia University, where he completed his doctoral research on intelligence test patterns of schizophrenics. While doing his post-graduate study he also worked part-time as a clinical psychologist, and for two

terms as an instructor in psychology at Drew University.

In 1948, shortly after marrying Erika Sehlmeyer and completing his Ph. D., he returned to India as a missionary, and was appointed Head of the Department of Psychology and Education at Ewing Christian College, Allahabad. In 1953 the late Prof. P.C. Mahalanobis invited him to come to Calcutta to set up a Psychometric Unit at the Indian Statistical Institute. In preparation for this Dr. Harper spent a year (1953-54) as a Visiting Associate at Educational Testing Service, Princeton, N.J., U.S.A. He then served at I.S.I., Calcutta, for three years. In 1957 he returned to his college in

Allahabad, and was appointed Director of the Bureau of Educational Research, his current post. He is also Consultant in India for ETS, Princeton.

Though he is an American citizen, Dr. Harper has spent two-thirds of his life in India. He has published nearly sixty books and articles. He is a member of Phi Beta Kappa and Sigma XI, of Rotary, of various Indian and American associations in the fields of psychology, educational measurement, and vocational guidance, and of the U.G.C.'s Committee on Implementation of Examination Reform. His name is listed in both *American Men of Science*, and *Who's Who in India 1974-75*.

## *University News*

### **WISHES**

*Its*

### **READERS**

**A Happy & Prosperous**

**New Year**

# Impressions of an Indian

SUMA CHITNIS

*THE VIII International Congress of Sociology was held at Toronto in August, 1974. The writer attended it as one of the members of the panel for the Round Table on School Systems. The writer visited Chicago, Madison, Philadelphia, Paris and Rome. In this article she gives her impressions about the academic scene in the USA.*

SINCE this was my first visit to North America, the entire experience was exciting, educative and enjoyable. Much of what I saw in Canada and the U.S. conformed to the stereotype I carried, particularly the affluence, efficiency and the opportunity for mobility. However, the sense of personal loneliness suffered by people, the insecurity of life in large cities, particularly Chicago and New York, were more than I was prepared for.

Looking at the academic scene, I was highly impressed by the confidence and by the expanse of the reading of both, students and faculty. Equally impressive was the fact that both students and faculty members owned a substantial collection of books, notes and bibliographies compiled at various stages, and further, by the fact that they seemed to be fully aware of old and new publications. They seemed to be reaching out to more and more. The faculty members and the students that I met seemed to be alive to both academic and non-academic current concerns and issues. This was refreshing. Both faculty and students are personally very well organized as scholars. In fact, this seems to be the principal feature of their academic quality.

The level of political awareness and political concern on the part of the academic community is far higher than it is in India. The idea of a value-

free sociology is growing to be increasingly obsolete and that both faculty and students seem to be keen on making their political position explicit and treating some of the basic tenets of the political ideology to which they are committed as axioms for the development of concepts and theory. The claim for value-free sociology tends to be regarded as impossible and absurd. The desire to remain value-free tends to be interpreted as an inclination. Both in appointing fresh staff and in securing tenure for staff already working, the political affiliation of the person being appointed or given "tenure" are of vital significance. Oddly enough, teachers pushed out by one university may be welcomed by another.

Another thing that struck me was the high degree of competition between faculties. This is probably an important factor in promoting research, writing and intellectual awareness. But it also inhibits the development of comaderie between colleagues and that it isolates scholars within a department as well as departments themselves from each other. It leads to a mass production of writing which may be of indifferent quality. One of the consequences of competition between academics as an accepted feature of the academic scene is that service "contracts" between faculty and Universities are not uniform. While this ensures that Universities are able to obtain the "best" and to the "best" in return it makes for a situation wherein a great deal of energy is expended in worrying and bargaining for improvement in one's position in the academic hierarchy.

As regards trend in social science research, there

Dr. (Mrs.) Suma Chitnis is the Head of the Unit for Research in the Sociology of Education at the Tata Institute of Social Sciences, Bombay.

is a slight shift away from the use of highly sophisticated statistics. Or rather, that there is a trend towards combining sophisticated qualification with more qualitative research. This is particularly true of younger social scientists. Techniques like path analysis and regression analysis are widely used, but at the same time there is a feeling that over-sophistication can blunt sensitivity of perception and hamper insight. There is a growing concern for research that is useful for application. Both in the U.S. and in Canada official interest in Indian studies seems to have cooled down considerably. Grants for Indian studies are reported to have declined noticeably. In spite of this, there is tremendous interest in Indian research. This interest is informal and unofficial. It seems to be motivated by an eagerness to examine, in the context of the Indian situation, validity and the relevance of sociological theories and concepts commonly accepted by North American social scientists. On the whole, the North American social scientists who are eager to share notes with us wish to do so because they believe that many of the issues that American society has to contend with today are being faced by us as well and that we, being placed differently may have some new perspectives to offer (this was particularly evident with respect to issues like equality for the scheduled castes and the scheduled tribes and student unrest). At the same time, the perspective of many North American social scientists is highly culture-bound. In discussion of issues like changing sex roles and the status of women, for instance, this was strongly evident.

### Chicago

The University of Chicago was my first exposure to an American University and it impressed me highly. Most impressive of all was the complex of faculties that the University consists of, the layout and beauty and the dignity of the architecture. Equally, or probably even more impressive were the library facilities. The Regenstein Library, which is the Central library for the University, is a demonstration of how comprehensive and efficient library facilities can be. Librarians are not only extremely eager to help but well equipped to do so because they seem to be sensitive to subject matter.

At the Department of Education, I met Prof. Arnold Anderson and Prof. Phillip Foster. Both have written and taught on developing countries. Phillip Foster is an Education-in-Africa specialist but he has written a little on India too and it was useful to share reactions. Arnold Anderson is an authority on developing countries. Foster again, gave me details regarding the courses in the Sociology of Education taught at the University of Chicago.

Most of the Indians deputed or sponsored by the Government to study at the University of Chicago seemed to be Government servants. This is alright, as administrators have a role to play in education, but, the fact that academics are poorly represented

is significant in that it underlines the weakness of academics in India.

### Wisconsin

At Chicago, if one really wants to see the splendour of American Universities, he should visit the University of Wisconsin at Madison. Unlike Chicago, Madison is not an industrial town nor is it a town that is plagued by crime and by hoodlums. In fact, education is the major business in this little town. (The second important industry is the making of sausages and third the making of beer.) Thus Madison has remained a lake and garden city, and provides the ideal setting for a University.

The comprehensive conglomeration of faculties, the well-planned layout and the impressive architecture at Madison were even more beautiful, because the University campus has an abundance of little lakes and ponds and undulates into several levels. One of the most impressive sights was that of students laying on the grass and reading as they sunned themselves on the lawned slopes of the main building of the University. Groups of students moving around looked lively and animated. They did not wear "good clothes" of the kind one would notice at St. X'Avier's, Elphinstone, Sophia, Jai Hind, Ruia, Sydenham or even National or Sidhartha in Bombay. Instead, they all wore worn and faded jeans and equally well-worn and simple shirts or top. They looked far more "equal" in dress than our students do.

I was not particularly impressed with the character of the communication between the teachers and students during the course of a lecture which I attended at Madison. Not all students were paying attention. The lecturer did not make any effort to draw in those who were not attentive. A caption in the classroom said smoking was not allowed but students smoked. The lecturer was trying to put across and stimulate fresh thinking on how bureaucracy can affect the commitment of teachers. In a systematic manner he suggested readings and related his point of view to the authors he mentioned. But if the lecturer had been better equipped with skills of communication, his lecture would have been immensely more useful. Unfortunately communication did not seem to be his strong point.

At Madison, I again had the opportunity to work in the library.

Unlike as at University of Chicago, access to library is completely free and open at the University of Wisconsin. The library and library assistance are well organized.

One of the most valuable experiences at the University of Wisconsin was the lunches I had with the faculty each day that I was there.

Practically every faculty member I met was well read and intellectually alert. Faculty members are, 'Specialists' in one area or another, sometimes,

in more. The younger they are, the more so. They are highly competitive, sometimes aggressively so. Competition does not seem to be at all easy. They seem to be struggling for tenures all the time and for jobs at better Universities. This is probably one of the principal sources of their productivity. The political positions and affiliations of teachers are of crucial importance in their jobs. Teachers who have political views that are contrary to those favoured by the Universities, or more specifically the departments they belong to, find it difficult to function within a department. There are "left" departments and "right" departments and as may be expected those who fit in with the 'right' may not fit in with the 'left.'

A faculty picnic on American Labour Day was organized by the faculty union. The families of American academics seem to be able to get together with much greater ease than we do. Of course, gossip concerning hierarchies in the University and such other small matters figured prominently in conversation. Faculty gossip is far more prominent than it is with us. But then, that is at

least evidence of greater interaction!

Teachers have teaching loads that are nothing compared to ours. Of course they perish if they do not use their leisure productively, but the fact remains that they are very well equipped to produce. It is interesting that academics generally marry women with academic interests. One of the most disturbing things heard was a comment to the effect that in academics the relationship between couples tends to get shaky or even break around middle age. In fact, this seems to be the current crisis in the social life of American Academics.

Yet on the whole the life of the American academic is rich and it must be satisfying. Academics live well. If they are competent as teachers or distinguished as scholars they are highly respected by students. Since students are well read and alert, teaching is a challenge. The academic atmosphere is such that it is likely to make for intellectual activity, alertness and stimulation and make for a meaningful life, at least for those who do not go under strain of competition.

## Pattern of Education

(Continued from page 3)

and do not proceed for the post-graduate studies. In their case, there is no point in adding one more year of study. For those good few (15 per cent) who wish to join for higher work and research, an Honours degree of 3 years is the answer. That can be notionally equated to our present previous M.A. or MSc.

The question which arises is where the *middle* 2 years classes—Higher Secondary or Intermediate in old parlance—be run?

In Maharashtra, there are schools which have only the Matric Classes. Some (mostly in Vidarbha and Marathwada) have Matric + 1 (called higher secondary) Classes.

I suggest that we do not disturb the schools at all. In future, Schools be allowed/advised to have only upto Matric Classes. In respect of the existing higher secondary ones the *status quo* should remain. This will obviate the need of making provision of library books, equipment of laboratories and of teachers in Schools.

These classes (eleventh=P.D., twelfth=F.Y. of TDC) should be run by Colleges as at present. Under the new pattern one year will have to be added for Honours at the end of (Matric+2+2) stage.

If Schools are invited to open these two classes (eleventh & twelfth), there will be a flood of applications from schools and it will be difficult to limit

the number. Further, the majority of students who leave education after the Matric, will be tempted to continue in the schools. The Government will have to take a heavy burden of finance in providing books, equipment and teachers in such (all) schools. Again the question will arise whether teachers of these two classes should have salaries higher than those who teach up to Matric. Today, as the classes are in colleges, they get lecturer's scales. If they are given in the schools, other teachers (up to Matric) will ask for the same on the ground of non-discrimination.

If these classes have to have vocational as well as transfer courses, schools will not be able to manage them. The fate of the multipurpose schools should be a warning. Nor can colleges run these vocational courses. Therefore, a limited number of junior/community/intermediate colleges be authorised to run vocational as well as transfer courses.

Thus, the two years after Matric be managed as under :

- by the present colleges, and
- by a limited number of junior two-year colleges.

The number of such limited junior colleges will depend upon the capacity of the nation to absorb the products of these vocational/terminal courses.

Under the above arrangement, there need not be a new Board for the (Matric+2) stage.

The author is Vice-Chancellor of Poona University.

## Zoology

# DOCTORAL DISSERTATIONS IN MAHARASHTRA UNIVERSITIES

J. H. SABNIS

AND

S. S. INDURKAR

THIS is a study of the doctoral dissertations in Zoology completed in Universities of Maharashtra upto end of 1973. It examines the area in which research has been done and the share of leading research guides in the total number of the dissertations. The research is supplemented by the data collected by the authors for five universities and constitutes the basis of the study.

The science of Zoology has been a principal subject of study in all Indian Universities for quite some time now. But it is still a developing science as in the case of all sciences. Research in Zoology varies fundamentally to satisfying the enquiring mind in the light of developing new theories. It also enriches the mind of researcher and the research guide by opening new vistas of enquiry.

Ph.D. programme in zoology in the Indian Universities appears to have started at the beginning of the present century. However, no systematic information on the dissertations completed is available till now.

**Purpose of this study:** The objectives of this study are (1) To examine the area in which research has been done in Zoology in Maharashtra, (2) To assess the share of the research guide in this regard and (3) to measure the opportunities and cost of Ph.D. education. The authors are indebted to all universities of Maharashtra for providing the needed information for this study. The doctoral degree by most Indian Universities is Ph.D. though D.Sc. is awarded in few cases. The study, however, excludes M.Sc. dissertations common in University of Bombay.

**Information on Doctoral Dissertations compiled in Maharashtra:** Considering the total for all the periods together, the largest number of dissertations was in the field of Physiology with 49 or 31.10% of the total number of dissertations, followed by Fishery—Biology with 28 or 18% dissertations. Embryology with 20 or 12.9% dissertations. Entomology also figures as an important field of research with 18 dissertations i.e. 11.6% of the total. Table I gives the number of dissertations in each subject in different periods of the total number of dissertations. These figures will enable us to discover how the preferences of the scholars for different subjects have changed over the period.

We see from Table I (on page 16) that proportion of the thesis in 'General-Anatomy' has declined over the period. In contrast, increasing emphasis is being given to the problems on 'Growth and Development'. Of late, Histochemical and Histo-physiological approach is drawing considerable attention of researchers.

In other groups while the number of dissertations has increased over the period, no definite pattern seems to emerge when we examine relative proportions. We, therefore, cannot say anything about the preference of scholars in the subject heads.

Considering the role of the theory oriented academic dissertation in the progress of Zoological Science, special attention needs to be given to the important fields like economic zoology with much more applied and productive basis. In these lines there are negligible investigations undertaken. It must, however, be borne in mind that the titles sometimes are misleading and therefore there are pit falls in such classification. Since only titles were available for the present, we must be content with this.

**Share of Research Guides:** Guiding a research scholar through his work is an enormous task. The guide must advise the researcher to choose the right topic and guide him at every stage in grappling with the issues. In this, his own immense research experience comes to the aid of the guiding teacher.

Apart from his own research papers, the contribution of a research guide can be judged by the number of dissertations that have been completed under him. Using this criteria, 22 research guides have guided 156 doctoral graduates in the five Universities of Maharashtra between 1936 to 1973. The information is tabulated in Table II (below). It however gives the information only in respect to those guides who have guided five or more students. Obviously, these are the students who have completed the course and obtained their doctorates. The order of the names of guides is on the basis of the number of doctoral graduates. Prof. Dr. A. Gopalakrishna of Nagpur University tops the list with 16 doctoral graduates to his credit. Dr. D.V. Bal of Bombay and Dr. Nagbhushnam of Marathwada stand second and third respectively.

TABLE II

**Guides who have guided five or more Doctoral Dissertations upto the end of 1973.**

Sr. No.	Name of the Guide	University	No. of Ph.D. Graduates
1.	Dr. A. Gopalakrishna	Nagpur	16
2.	Dr. D.V. Bal	Bombay	15
3.	Dr. R. Nagbhushnam	Marathwada	11
4.	Dr. S. Mehadi Ali	Marathwada	10
5.	Dr. P.V. Rangnekar	Bombay	9
6.	Dr. L. Muhlerkar	Poona	9
7.	Dr. D.N. Kamat	Shivaji	8
8.	Dr. S.H.M. Khatib	Nagpur	6
9.	Dr. M.A. Moghe	Nagpur	5

**Study of the time lag in the completion of Dissertations:** In most universities, unlike in the case of other post-graduate courses Ph.D. programme has no time limit. The dissertation is submitted after completion of the work, whatever time it takes. This is as it should be, because results elude the researcher like a crooked shadow, at least for a time. But research scholars are people who can almost readily get alternative productive jobs in academic or research institutes. There is therefore, an opportunity cost of a higher order involved in scholars pursuing research education. Though this cannot be measured directly, we can consider the number of years taken to complete the work as a measure of cost to the society. However, in view of the importance of this information, we have collected the same in respect of Ph.D. graduates of various universities of Maharashtra for the period under study and following analysis is based on the data collected.

Due to non-availability of the records particularly on students prior to 1946, data in respect to 106 stu-

dents could be obtained. However, this forms a fairly large number on the basis of which we can draw conclusions in respect of all doctoral students of various Universities of India in general and Maharashtra in particular. The statistical test is applied to the sample so that our conclusion can be taken to be valid for the population of University students in Maharashtra. Table III (below) gives the frequency distribution of the number of years taken by 106 doctoral students for completing their dissertations.

TABLE III

**Showing number of years taken for completing the Dissertations by students of various Universities of Maharashtra**

No of years taken X	No. of Students	Relative frequency
2	8	7.54
3	22	20.74
4	41	38.67
5	28	26.41
7	4	3.77
8	2	1.88
9	1	0.94

Arithmetic mean or  $X = 5.428$  years

Standard deviation of sample or  $S = 2.128$

Unbiased estimation of population standard deviation = 2.212

Coefficient of skewness or  $P_1 = 0.927$

Coefficient of Kurtosis or  $P_4 = 3.645$

We see from the table that number of years taken vary from two to nine years. From relative frequency however, we find that these extreme values cover only small population of total number of students. In fact the range of three to five years cover more than 80% of students.

To judge the behaviour of the distribution on the population of the doctoral students we calculated the mean, the unbiased estimator of the population standard deviation; the skewness and Kurtosis from sample. The values of these estimates are given along with the frequency.

The sample mean is true estimator of the population mean subjects that on average take 5.428 to complete a dissertation. The value of 2.128 which is unbiased estimator of the population standard deviation suggest that  $5.428 \pm 2.128$  years comes approximately 83.36 of the population or about 85.67 of scholars take between 3 to 5 years to complete the work. The skewness is found to be .927, signifying the presence of extreme value to the right of the mean. The value was found to be significant at 2.01 (This is

defined as follows  $S = \sqrt{\frac{N}{N-1}} S$  where N is the sample) level. The value of 3.645 of Kurtosis indicates that the distribution is leptokurtic or that it

has a pointed top and long tail. The kurtosis too was significant confirming the presence of extreme value in the population of doctoral students.

From the analysis of the time lag we may therefore, conclude that the average of 5.428 which we consider as approximately cost of Ph.D. education to the society is high indeed. However, the time lag as between different student were wide. There are a very few who take long time to complete their work, but their number is small. The large majority take between three to five years.

**Limitations of the Investigation:** The limitation of the investigation mainly arose from limitations of the data available. For example we have classified dis-

sertations as belonging to different subject purely on the basis of their titles. Titles may sometimes be misleading. Again some thesis appear to tilt into two or more different classification equally well.

Secondly our analysis of the distribution of the number of years taken by doctoral students do not enable us to say anything about time lag in Indian Universities in general. This is so because we have no means to know whether population of the students of the University is homogeneous or not. Therefore, only when the information on the time lag for more centres becomes available, can we extend our analysis to the all India level.

TABLE I

**Period-wise and subject-wise classification of dissertations completed in the different Universities of Maharashtra till the end of 1973.**

Subject	Upto 1945	1946 to 1950	1951 to 1955	1956 to 1960	1961 to 1965	1966 to 1970	1971 to 1973
Anatomy	1 — B	2 — B	2 — B N	1 — N	1 — B N	2 — P	1 — B N
Fishery-Biology			1 — B	5 — B	5 — B	7 — B N	2 — B S N
Cytology				1 — B	2 — P	1 — S P	1 — —
Physiology		4 — B	2 — B N	1 — B P	2 — B S N M	3 — B S N M P S N	4 — B 4 10
Embryology		2 — B	1 — P	4 — B P	5 — B N	1 — M P N	2 — —
Entomology	—		1 — B	1 — P	4 — B P	5 — B N	1 — M P N
Helminthology	5 — B		2 — B	1 — N	4 — M	3 — M	4 — M N
Genetics							1 — B

*Numbers indicate dissertations completed under subject head and capital alphabet represents University (B—Bombay; N—Nagpur; M—Marathwada; P—Poona; S—Shivaji).*

# How to Achieve Gold —A Pilot Project

GURCHARAN SINGH

THE Union Government and the States at their own level have always been considering various proposals to acquire status in the field of sports in the world, but somehow we have not been successful in fulfilling our dreams in getting the Gold. There is no doubt we lack facilities with regard to proper equipment and to some extent nutritious food for the players, which can easily be made available by such a vast nation as of ours. Proper incentive can also be provided to the coaches if they could achieve our target of Gold. Here is a small pilot project which can be experimented in some of the States at the Primary and Middle School levels and I am sure, we will achieve our target of producing very good sportsmen and women at the lower stages of education which has been neglected or overlooked by the promoters of sports in this country.

The base of this Scheme should be purely in the villages, and schools has to be selected with utmost care where we can get a teacher who has either played for the university or the district in a particular game. There is no dearth of such teachers in India. The teachers should be selected in the following five games and sports. Only 100 schools should be selected, each game covering 20 schools for this purpose.

- (1) Athletic. (2) Volley-ball. (3) Hockey.
- (4) Foot-ball. (5) Wrestling.

These five are the international games to start with the Scheme.

#### Selection of Teachers

A committee may be set up by the Government for this purpose with experienced hands in the field of sports. This Committee should invite applications from the teachers who have been players either at District or University level of above games through the Director of Education of each selected State. Players of higher level should be given preference. Only twenty teachers in each game should be selected.

#### Training

Two months' intensive training to these teachers should be arranged under eminent coaches of National Institute of Sports at five different stations

or the N.I.S. should be requested to impart training to the teachers in all the five games.

After training, these teachers will go back to their own schools and impart training in the specific game to the young boys and girls and prepare a hard core of sportsmen in the rural India and will spot out the talent in the villages which can be well looked after by the State. Fifty students are expected to be benefited by getting the training in each school under this Scheme every year.

As there will be 20 schools imparting and preparing the young men and women in one game, it is desired that competition at least twice a year should be organised to assess the progress of the game. This will help in boosting the competitive spirit among the young players.

It is desired that Rs. 50 be given as honorarium to the teachers who have been selected for this job.

#### Equipments

Every school should be provided with the equipment for the game it has been selected for by the Director of Education of each State from its own funds or Central Government may share this expenditure with the States.

Arrangements for nutritious diet may be made from the Balahar. This may be distributed through Nehru Yuwak Kendras.

#### Financial Implications for the First Year

(1) Total honorarium for 100 teachers	
Rs 50/- p.m. for one year	= Rs 60,000
(2) Equipment for Schools	= Rs 40,000
(3) Expenditure on Training and Food for two months for the Teachers	= Rs 50,000 (only once)
(4) T.A. etc. for the Trainees Rs. 50/- each	= Rs 50,000 (only once)
(5) T.A. to Coaches Rs 100/- each for 20 Coach	= Rs 2,000
(6) Incidental	= Rs 3,000
Total	= Rs 1,60,000

Expenditure in the succeeding years will be approximately Rs. 10,0000, when worked out, it will be only Rs. 20/- per year per student.

The author is Senior Youth Officer at U.P. Regional Centre (NSS), Mahanagar Extension.

# *Read* University News Chronicle

1975

JANUARY					FEBRUARY					MARCH					
S	5	12	19	26	S	2	9	16	23	S	30	2	9	16	23
M	6	13	20	27	M	3	10	17	24	M	31	3	10	17	24
T	7	14	21	28	T	4	11	18	25	T	4	11	18	25	
W	1	8	15	22	W	5	12	19	26	W	5	12	19	26	
T	2	9	16	23	T	6	13	20	27	T	6	13	20	27	
F	3	10	17	24	F	7	14	21	28	F	7	14	21	28	
S	4	11	18	25	S	1	8	15	22	S	1	8	15	22	29
APRIL					MAY					JUNE					
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W	2	9	16	23	W	7	14	21	28	W	4	11	18	25	
T	3	10	17	24	T	1	8	15	22	T	5	12	19	26	
F	4	11	18	25	F	2	9	16	23	F	6	13	20	27	
S	5	12	19	26	S	3	10	17	24	S	7	14	21	28	
JULY					AUGUST					SEPTEMBER					
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T	1	8	15	22	T	5	12	19	26	T	2	9	16	23	30
W	2	9	16	23	W	6	13	20	27	W	3	10	17	24	
T	3	10	17	24	T	7	14	21	28	T	4	11	18	25	
F	4	11	18	25	F	1	8	15	22	F	5	12	19	26	
S	5	12	19	26	S	2	9	16	23	S	6	13	20	27	
OCTOBER					NOVEMBER					DECEMBER					
S	5	12	19	26	S	30	2	9	16	23	S	7	14	21	28
M	6	13	20	27	M	3	10	17	24	M	1	8	15	22	29
T	7	14	21	28	T	4	11	18	25	T	2	9	16	23	30
W	1	8	15	22	W	5	12	19	26	W	3	10	17	24	31
T	2	9	16	23	T	6	13	20	27	T	4	11	18	25	
F	3	10	17	24	F	7	14	21	28	F	5	12	19	26	
S	4	11	18	25	S	1	8	15	22	S	6	13	20	27	

#### LIST OF HOLIDAYS

Muharram	23 January	Budha Purnima	25 May	Dussehra	13, 14 Oct.
Republic Day	26 "	Independence day	15 August	Diwali	3 Nov.
Holi	27 March	Janmastami	30 "	G. Nanak's B. day	18 "
Grand Eid-e-Sherif	28 "	Gandhi's B. day	2 October	I.A.L.T. etc.	14 "

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# CONVOCATIONS

## Ahmed stresses need for imaginative action

PRESIDENT Fakhruddin Ali Ahmed while delivering the Convocation Address of Guru Nanak University at Amritsar said: A convocation address customarily is in the nature of an 'Ashirwad' or a sermon. I would like to deviate from this convention. Not because any deviation from convention is instinctively applauded by the youth but for reasons of relevance to the times we live in. I wish to share with you some ideas and reflections on the present situation particularly as it concerns the youth and the university.

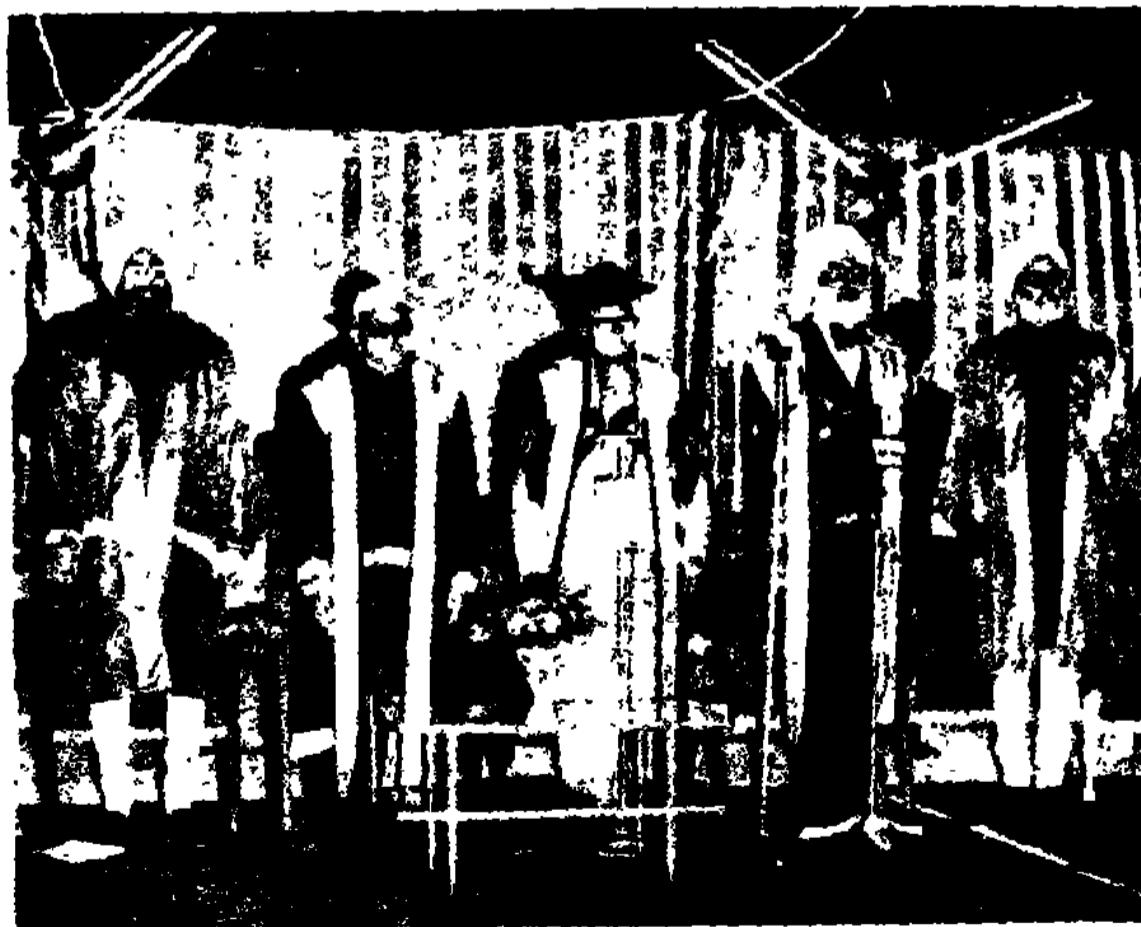
The universities in any country are the nurseries of leadership for the future. As the improvement of leadership is the king-pin of all developmental effort, the need for gearing our universities to this task assumes great importance. The first aspect, I would like to highlight, therefore, is the necessity for re-tooling the apparatus of education to serve the present-day needs of the Indian society. As Frederick Mosher puts it: "The challenges to career systems deriving from the knowledge explosion and the accompanying changes in conception of problems, technological and social, are a specially intensified case of a broader challenge of modifying institutions to keep up with accelerating dynamics of our culture."

The rapid development of higher education in India has undoubtedly resulted in many innovations and some qualitative improvement. Going through the papers concerning your university, I found a reference to the comparative study of religions and to the facilities for study of languages

other than Punjabi. The basic tenets of all religions are one and the same. It is the same thought, the same impulse of love, the same yearning for truth that is found in all religions. Swami Vivekananda had rightly said: "If one religion be true, then all the religions must be true." Literature mirrors the hopes and aspirations of the people. Each language has to be developed and its literature enriched so as to enable it to become a fit vehicle and a rich treasure-house of knowledge—ancient and modern. I am glad to know that you have initiated a comparative study of religions and an exchange of liter-

ary ideas through translations of the great religious and literary works. These are welcome developments that would strengthen the bonds of national unity and help in bringing about the emotional integration of our people.

Much needs to be done, however, in designing the content of purposeful education. This is essentially the task of the university community, though the Government can provide a helping hand in the process. Without sounding pessimistic, I want to draw your attention to the fact that the lack of any deep involvement in the nature and process of social change on the part of the young people, their teachers, parents and administrators has often resulted in confusion and inertia. Little has been attempted to develop meaningful communication, mutual participation and proper cohesion so necessary to



At the Fourth Annual Convocation of the Guru Nanak University

generate a sense of purpose and fulfilment. Educational authorities remain comparatively weak elements of national establishments and continue to receive insufficient attention and backing from public opinion and at the hands of decision-makers. This has resulted in loss of vigour and vitality on the part of the university community. The educationists — both the teachers and the students have to strive hard to come out of the impasse. I am merely reminding them of the situation they have landed themselves in.

It is a matter of deep concern to me that by and large our educated young men have accepted a concept of development which is out of date even in the global context. Unfortunately, economic development and social change concepts have been largely divorced from cultural development and quality of life. This race for progress is conceived on the same pattern and along the same lines as experienced by the developed world and its industrial societies. The images of affluence and high consumption and the life styles of these societies fascinate and inspire our young men and women who are obsessed with the idea of economic development predominantly Western. The pursuit of such a concept of development, borrowed from alien cultures and conditions, generates efforts to reproduce the scenario industrial civilisation in a predominantly rural society resulting in loss of originality, even reality and the accentuation of the hiatus between the elite, who are the main beneficiaries of development, and the masses. A result of this acceptance of the Western model is the failure to develop intermediate technologies, indigenous sources of energy and more relevant forms of management. I would like to impress upon the graduates coming out of this University and the university community assembled here to take a lead in questioning this untenable concept of development.

Another matter of concern is the universally talked subject of student unrest and indiscipline. Let us not forget that unless and until

there is discipline, nothing worthwhile can be achieved. Democracy can function only if there is discipline and dedication on the part of citizens. Education is the most powerful instrument by which democracy establishes, maintains and protects the spirit of equality among its members. The academic community in India has thus the onerous responsibility of nurturing democracy.

Without simplifying the issue, I venture to say that there is need for closer communication, deeper understanding and imaginative action on the part of all concerned with the process of higher education. The dichotomy between the academic knowledge and the environment, among other things, has accentuated the problem. I believe educationists themselves are their best saviours and the will and commitment to re-

form has to come from them mainly.

I expect young men to agitate for higher things of life, for issues that shape their destinies and the destinies of those who will come to the universities tomorrow. But throughout these manifestations of discontent — an essential ingredient of academic life — it is wise to remember that you do not fail to lead what our beloved leader Jawaharlal Nehru called the life of the mind. It looks strange that although mind counts for such a great deal in sophisticated domains of human knowledge, it counts far less and less in the handling of human affairs and in life as a whole. I appeal to the young men and women before me to accept this challenge and be pace-setters to the world at large.

## Job-oriented Courses

### Nurul Hasan advises caution

PROF. NURUL HASAN, Union Education Minister while addressing the 6th convocation of the South Gujarat University at Surat, said: There has been a spate of continuous and violent attacks on our university system in recent years. Of course, to an educator like myself, public criticism of education does not come as a surprise because dissatisfaction with the existing educational system has been a characteristic of all countries and of all times. I can also understand the recent spurt in such criticism because we are passing through a period of severe stresses and strains and it is but natural that tempers would be more often frayed in such a situation and that everything, including education, would come in for a good deal of criticism. I would, however, not be surprised if at least some of the young graduates who would be receiving their degrees and distinctions today feel worried about the basic objectives and the utility of the entire system of higher education and about the individual and social goals it is expected to achieve.

A system of university education has several important objectives. It preserves and disseminates the knowledge which has already been acquired and continually seeks new knowledge; it produces bands of competent men and women, trained in the different professions, who provide the society with the right kind of leadership in all walks of life; and it strives to promote equality and social justice and to reduce social and cultural differences through diffusion of higher education (to which, in the past, only a small upper class had access) to large numbers of talented young persons from all classes of society. But its most important purpose, without which none of these objectives can ever be realised, is to nurture the intellect of the nation and to commit it to basic human values. University education awakens curiosity, promotes self-study habits, sharpens intellectual faculties, develops problem-solving abilities and inculcates values and attitudes which commit young men and women to humanism, pursuit of

truth and excellence, freedom, equality, justice and the mutual interdependence of the individual and the society. In the modern world which is changing with great rapidity, the future has almost become unpredictable and every generation has to go through its life as one might cross an unknown and uncharted ocean. In a situation of this type, where any eventualities and problems may arise at any time, the existence of an adequate band of such well-trained and deeply committed men and women makes a material contribution to the survival and progress of a society. The continuous production of these bands is the main function and responsibility of the university system.

How does a university system cultivate the intellect of the nation and commit it to basic values? Negatively, it may be asserted that this does not depend upon the subjects taught. There is a common tendency to describe some subjects like economics or commerce as being more relevant or useful than some other subjects like philosophy or the classics because the employment opportunities for the former are far greater than those for the latter. Similarly, subjects like medicine or engineering receive a much higher premium than those like anthropography because the former ordinarily bring in much larger incomes than the latter.

But these considerations of employment opportunities or levels of income earned are extraneous and do not affect the basic potency of each of these subjects to cultivate the intellect on right lines. In fact, some of the subjects, like classics or philosophy, have even a greater potential to cultivate the intellect, to sensitize the individual, and to give him a deep and comprehensive vision of life than many popular subjects which happen to have a greater employment potential or a capacity to bring in higher incomes. It is not being suggested that we should not invest resources in producing an adequate number of doctors, engineers and scientists. But it is necessary to emphasise that it is equally worthwhile to invest

resources in promoting the study of humanities, of philosophy, of the classics, of social sciences and of art and culture. What is even more important, it is essential to include a content of humanities, social sciences, art and culture even in the education of scientists and technicians to give them a broader vision of life within which they can properly orientate their own skills and specialisations, just as it is equally essential to introduce students of humanities and social sciences to the fundamental contributions of science and technology. In realising the basic objective of higher education, therefore, every subject included within the seamless and infinite web of knowledge has an important role to play; and it is but proper that the university system should utilise all these subjects, with almost equal emphasis and success, to cultivate the intellect of the nation and to commit it to basic human values.

Positively, it may be said that this cultivation of intellect and its commitment to basic values depends, in the last analysis, on two major factors. The first is the methods of teaching employed. For instance, science, instead of inculcating objectivity, rationalism and a relentless pursuit of truth in the minds of the students, can also be taught like magic and be made to strengthen superstition instead. On the other hand, subjects like literature and classics can also be taught to promote rationalism and to inculcate a commitment for the pursuit of truth and excellence. What matters in the educational process, therefore, is the stimulation of the minds and hearts of the students to bring out the best in them by making them face challenging problems and situations. This is essentially a question of the techniques of teaching employed and can be done in any subject.

He welcomed all proposals to make university education really effective through improvement of curricula, production of better teaching and learning materials, raising the competence and status of teachers, adoption of dynamic methods of teaching, examination reform, establishment of autono-

mous colleges, promotion of research and reform of university administration, including greater involvement of students. These are broadly the programmes which the University Grants Commission is trying to implement and they should receive the full and sympathetic cooperation of the entire university community.

The proposals often put forward for the introduction of 'job-oriented' courses within the university system fall, however, in a different category and need a closer scrutiny. That we should provide training for specific jobs which exist in society, is an unexceptionable proposition. And where such courses can be satisfactorily demonstrated to have a place at the university stage, there should be no hesitation in introducing them. A closer examination will, however, show that such training courses are more likely to succeed at the secondary than at the university stage. Moreover, there is no basis for the naive assumption often made that there are plenty of jobs available in the society and that all that needs to be done is to provide suitable training. The fact probably is the other way round: there are so few jobs available in the society that the introduction of 'job-oriented courses' on a large scale is likely to create more problems than solve them. It would not also be quite right to assume that such training would necessarily lead to self-employment: it will require the development of a large and costly infrastructure for supplying raw materials, provision of credit and machinery, and arrangements for marketing and sale of finished products. All things considered, one would advise caution in respect of 'job-oriented' courses, except where specific data or man-power estimates of employment opportunities are available.

One more point deserves emphasis. 'job-oriented' courses, whatever their utility and scale, are still essentially programmes of 'training' which implies the preparation of an individual for a specific job. This is a worthy and important objective, but its limitations should be recognised.

In the old days, when changes in technology and society were slow, a person trained for a job would expect to pursue it throughout his life. This is no longer so in the fast changing modern society where large categories of jobs may totally disappear in a few years and the persons trained for them would be required, at different periods of their life, to learn new jobs for their livelihood. In the not too distant future, an individual may have to follow half a dozen or more jobs in a life-time. Training for specific jobs, therefore, is a necessary but a comparatively simpler and frequently repeating process in modern societies. What is even more important is that this process of training should not be confused with the broader process of education whose objective is, not to fit a given individual to a specific job, but to enable the individual to realise his own potential to the full and to grow intellectually, emotionally and spiritually. While, therefore, the problem of 'job-oriented' courses should be tackled in their appropriate and limited fashion with the context of higher education, they should not be allowed to dominate, as is sometimes proposed, the entire system of university education itself. That would be tantamount to sacrificing the whole future of the society for a few partry gains of the moment.

What should be the policy of persons like us who are colleagues and co-workers in the field of higher education in the face of such distressing and often undeserved criticism? I would suggest three measures:

(1) We should not at all get depressed by these attacks which are obviously biased and which slur over the many good points of the system and exaggerate its weaknesses unduly;

(2) Where the criticism is right and puts forward concrete and realistic programmes of reform there should be no hesitation in accepting it and in devising suitable measures; and

(3) We should remain unruffled

and pursue all our programmes for the improvement of higher education with courage, perseverance, vigour and efficiency. It is our success in transforming the present educational system that will provide the best answer to silence this criticism effectively in the long run. It is unfortunate that so much energy is spent in this criti-

cism itself that hardly any is left to make the needed effort to support the system or to remove its shortcomings. One, therefore, wishes that there was a little less of a merely negative criticism and a little more of a positive effort to improve the situation. Let us hope that the pendulum will swing back to normal after some time.

## Varsities must take up practical problems

ADDRESSING the 23rd convocation of Gujarat University, Dr. K.R. Ramanathan, eminent scientist, called upon the university to promote self-reliant growth of science and technology and to facilitate their utilisation for the national purposes.

Dr. Ramanathan said that students and teachers, while engaged in basic sciences, should "keep a contact with the live problems of their environment." These should include the social and economic conditions of the poorer sections of community.

He said that attempts to study these practical problems would lead to the growth of basic sciences also. He especially commended the problems of land and water use and management to the university authorities for extensive research work.

Dr. Ramanathan said that since cultivation of experimental sciences was becoming an expensive affair, there should be increased collaboration among the universities for the creation of centres of excellence. In the absence of such collaboration, facilities would be duplicated unnecessarily in an ineffective manner.

Dr. Ramanathan said that universities in Gujrat could play a vital role in the development of science and technology as the state was well suited for such progress in view of its location, physiography, natural resources and its commercial and industrial history.

He said there were several institutions of higher learning and research in the state. Secondary, technical and engineering education was rapidly spreading in Gujarat and the growing population of technicians and craftsmen, including those self-employed, would welcome a constant touch with addvance technology.

Reviewing the developments in the fields of science and technology in the country since independence, Dr. Ramanathan said that while much had been achieved, difficulties were being experienced in the satisfactory implementation of projects involving a large number of personnel.

In regard to the contribution of science and technology to the industrially developed countries, Dr. Ramanathan said that the people of these countries had acquired comfortable standards of living. But the development of industrial complexes had also led to unemployment and pollution.

Earlier, Mr. Ishwarbhai Patel, vice-chancellor of the university, welcomed Dr. Ramanathan and lauded his contribution to science.

Mr. Patel said that the university was alive to the requirements of the employment market and had been introducing vocational training courses and other employment-oriented courses.

He said that the courses started by the centre for management and professional training had proved

to be a big success and most of those passing out from the centre were able to get jobs.

He said that there was shortage of trained manpower alongwith unemployment and this curious situation could be remedied only through proper planning of the educational courses.

He said that among the courses to be introduced shortly were stenography and secretarial practices, marketing and salesmanship in textiles, bank recruitment test

training programme, photography, instrumentation and research methodology.

About 3,137 candidates belonging to different faculties received their degrees and diplomas at the convocation while these were conferred in abstentia on 10108 candidates.

Sixty-two candidates were awarded medals for their outstanding performance in examinations. Twenty-six candidates were given scholarships and awards. □

## Mahajani calls for Open Universities

Dr G.S. Mahajani, Vice-Chancellor of the Poona University, in Bombay called for the establishment of "Open Universities" for the 14 linguistic regions in the country to ease the rush of students on traditional universities.

He also favoured the de-linking of recruitment to jobs from degrees. Dr. Mahajani was delivering the Convocation address of the University of Bombay.

He called upon educationists to resist the temptation to increase the syllabus of courses because of the knowledge explosion.

The "Open University", Dr. Mahajani said, will help "home" students who cannot find places, those for whom study by correspondence was the accepted tradition (90 p.c. of the chartered accountants in UK) and adults beyond the normal age who can devote only limited hour to study. Such a university had already been established in the UK in 1970.

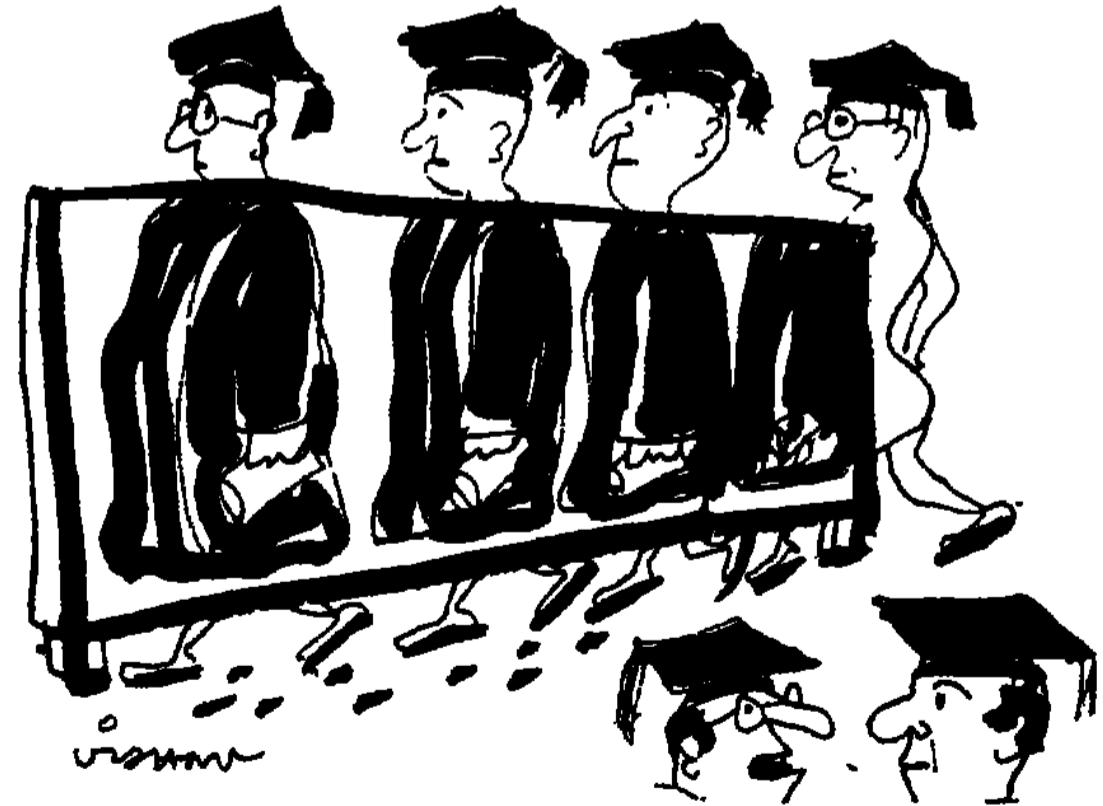
The question paper should be designed to test the great mass of average students — but it had also to test the good few in the top brackets. The idea now was to create a pool of questions for each paper. Half the question paper would be drawn from this "question-bank" and the remaining half would comprise "starred" questions of a testing nature for the purpose of judging the calibre and ability of the top students. The 'question bank' must not be large. If a paper required

eight questions to be solved, four would be from the bank. Candidates would not mind mastering some 30 to 40 questions of the bank for the four to be expected. Four results would follow: the evil of coaching classes would gradually disappear; the frequent walk-outs from examination halls

would also disappear; the number of failures would be considerably reduced; and the congestion in college classes caused by the presence of repeaters would go.

Dr. Mahajani drew attention to the NCC evaluation committee that a five-day week should be adopted in universities for academic instruction as in the US and the USSR, keeping Sunday free and fixing the sixth day as a non-instructional day to be devoted to the NCC, NSS, NSO, social work and work experience schemes. On the sixth day, the students and the teachers would come into closer and informal contact.

Turning to examination reform, Dr Mahajani said that multiplicity of examinations was not the real evil. The fear complex due to a single examination determining the candidate's fate was the main evil. The student must be inducted to study uniformly throughout the session. To meet both considerations, periodical internal assessment was the answer.



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# *Round Up*

## *Non-formal Education project launched*

THE department of Adult Education, University of Rajasthan, has started an experimental project on non-formal education of the urban community. The objective of this project is to find a new model university contribution to community life for its general improvement. With this aim and keeping in view the limited resources of the department it has adopted a part of the urban community, Anandpuri, situated on Moti Dungari Road, Jaipur, as an experimental project. More specifically the aims of the project are: (1) To impart knowledge, understanding attitudes and skills to improve the life-style of the community; (2) To help them to adjust to the changes taking place in the community; (3) To experiment a new model of educational programme so as to gain understanding for (i) wider applications (ii) training for leadership roles; (4) Experiments new teaching methods particularly the discussions method; (5) To get university elite interested in the problems of the under privileged.

The programme will run for one year beginning 1st September, 1974. Since this is a goal and activity-oriented programme, appropriate teaching methodology and technology will be used. The main thrust will be on group-work based on discussions under the guidance of experts. To enrich the programmes audio-visual aid, demonstration and field trips will be made. The programme is being conducted with great economy. All efforts are being made

to avail resources from outside the university. The total project is likely to be managed in a small sum of Rs 3,000. To have a valid and reliable evaluation of the programme there will be three surveys: (a) A base-line survey to assess the level of knowledge of the participants; (b) Operational survey to assess the growing impact of the programme? (c) A final evaluation towards the end of the programme vis-a-vis objectives.

## NCC Celebrates 26th Anniversary

THE Jaipur battalions of National Cadet Corps celebrated their 26th anniversary with an impressive display of machine-gun and artillery firing, avro-modelling and other interesting events recently. Several hundreded cadets of junior and senior wings at of NCC participated in the celebrations organised at the Haldi Ghat Lines.

The Minister of State for Education, Mr. Fatookh Hasan gave away prizes to the winning cadets. He commended the NCC's programmes in Rajasthan and hoped that students would work with courage, foresight and determination following the discipline learnt in this cadre.

Brig. D.S. Katoch, Sub-Area Commander was first and Col. Govind Singh second in clay-pigeon event for guests.

## Afghan Delegation in Jaipur

AN eleven-member delegation of adult education officials from Afghanistan led by Mr Ghulam Mohiuddin Shewa, had a discussion with Rajasthan State officials on Farmers Functional Literacy Project at Jaipur.

Mr Shewa said that supply of agricultural inputs was linked with FFLP in Afghanistan and it had proved a good motivation to attract and literate them.

Mr R.S. Mathur, Assistant Director of Adult Education, New Delhi dwelt at length on the FFLP in Rajasthan and said this project was being conducted in Udaipur, Jaipur, Kota and Bharatpur districts. As many as 6,995 adults had been made literate since 1969-70.

## SACTS Celebrates Foundation Week

THE SACTS' (Science, Arts, Commerce and Technology Students') Study Forum, University of Sagar University celebrated its Foundation Day Week recently. The programme which was highly interesting and educative consisted of functions and activities like cultural show, Symposium, lectures, and Education cum picnic trips.

One of the most interesting events of the Foundation Day celebration was the organisation of the Symposium on 'Youth Unrest' in three sessions. These sessions were presided over by Prof. A. Awasthi, Prof. S.S. Nigam and Shri Lavnam. Among the distinguished speakers were Prof H.S. Asthana, Col. H.S. Chandele, Dr. W. D. West, Prof. Aswathanarayana, Prof. S. S. Nigam, Prof. D. N. Misra, Dr. A. Mukerji, Dr. Jaya Prakash, Dr. Saraf, and SACTS R.K. Goswami, T.N. Sharma, S. Bhattacharya, and G.V.V.S.D.S. Prasad.

# Saurashtra Varsity Ordinance shortly

UNDER an Ordinance to be issued soon, Saurashtra University will declare that the students leaving the examination halls will do that at their own risk and that the University will be under no objection to hold re-examination.

The proposed ordinance is part of a determined bid by the University to make examinations free from the evils of copying and boycott and ensure their sanctity, purity and honesty.

These major decisions were taken by a special meeting of the syndicate of the University held at Rajkot recently as part of its drive to devise ways and means to root out evils in examinations.

Mr. Yashwantbhai Shukla, Vice-chancellor of the University, said that this would be a continuous process. He said that the measures considered were intended to be short term measures as the University was already seized of a long term measure like reforming the entire examination system. Under these long term reforms, the syndicate has already taken certain decisions on the examination system based on the report of a seminar held at Bhavnagar on July 15 last. The matter was pending with the Academic Council, various faculties and Boards and their reactions were awaited. After the matter was cleared by these bodies, the university would be in a position to invent the requisite machinery by some time this year for implementing the reforms. Mr. Shukla said that the new system might be implemented from March 19, 1976 by stages.

It has been decided that the members of the senate will be placed as observers at every college in which examination may be held. Moreover a citizens' committee consisting of eight to ten

members, both officials and non-officials selected from different walks of life, would be set up and would be requested by the University to go round colleges and vigorously watch the examinations and ensure keeping the outside elements away from centres.

The Vice-chancellor said he would shortly launch a drive to have a full scale dialogue with the students, teachers, principals, leading citizens, Pressmen and others to ensure smooth implementation of these decisions.

## Plea for acquiring Relics

EMINENT historian Prof. Ganda Singh suggested to the universities to take initiative to acquire historical documents and relics from old families for taking photostat copies and making them available for research.

Presiding over the 35th session of the Indian History Congress in Calcutta Prof. Singh said Union and State Governments should help this project by appointing small commissions to supervise the progress of work.

He said source material for historical research presented genuine difficulty. No serious effort had been made in many States to collect balladry literature and other records to make them available in places like the archives or universities for research and publication.

Four hundred delegates from all over the country and 10 others

from the UK, Bangladesh, the USA and the USSR attended the three-day deliberations.

Union Minister of Education Prof. Nurul Hasan who was scheduled to address the Congress could not reach.

President Fakhruddin Ali Ahmed in a message extended his good wishes to the Congress.

Earlier, inaugurating the Congress, West Bengal Governor A.L. Dias said historians in their study of human affairs should treat as most important the question of selecting what was significant and of lasting value.

## Longevity in Bulgaria

THE Bulgarian people have so long been known for their longevity. In the number of centenarians in the country (52 per 1 million people), Bulgaria occupies one of the top places in the world.

At present more than 460 persons over the age of 100 are living in the Bulgarian town and villages. Two-thirds of them are women.

What are the principal factors that bring longevity to the Bulgarians?

The Institute of Endocrinology and Geriatrics with the Medical Academy has been looking into this problem for years.

Based on their extensive research, the staff of the Institute have reached the conclusion that work plays the most important role in the length of life. Bulgarian centenarians are, as a rule persons who have worked mostly in the open as farmers and livestock breeders from early childhood to old age.

Nutrition is another important factor. Without the faintest idea about scientific nutrition the majority of the centenarians have adhered to moderation and variety in their food. Their staple foodstuffs have been bread, milk and dairy products (white and yellow cheese) and vegetables (potatoes, beans, peppers and

tomatoes). It cannot be said that they have restricted themselves to eating little meat but they have had a preference for vegetable fats. Some of the centenarians have also been smokers and have not refused an occasional glass or two of wine or brandy.

It has been found that more than 90 per cent of the centenarians originate from large families. They married very early and had from four to ten and even more children. Their marital life lasted for more than 70 years. Some of them have been married three or four times but not because of divorce but because of the death of their spouses.

Not one of the centenarians has suffered from a grave or chronic disease, and many of them have never sought medical aid or taken medicines. They are mostly people with well-balanced nervous system.

The way of life of most of these centenarians has been simple and sometimes even rigorous. They have not worn too heavy clothes and have not slept on spring-mattresses.

Medical examinations of centenarians have revealed that the process of aging in them goes gradually and regularly through the whole organism, damage caused by atherosclerosis is more limited than usual, and they have well-preserved hearing and sight.

## Dr. Arunachalam honoured

DR. V.S. ARUNACHALAM, Scientist, Materials Science Division has been honoured by the Ministry of Steel and Mines as one of the four metallurgists of the year. The award carries Rs. 3,000/- and a scroll of honour. The citation read during its presentation of the award made a reference to Dr. Arunachalam's significant contributions in the fields of physical, mechanical and powder metallurgy.

Dr. V.S. Arunachalam is a research metallurgist working in the Materials Science Division of the National Aeronautical Laboratory for the past five years. He was educated at the University of Mysore, Saugor and Wales. Now, he is working in a team which is attempting to produce titanium alloys starting from powder. This development now underway at the National Aeronautical Laboratory, envisages producing titanium powder using a novel electron beam set-up and later consolidating them to required shapes and sizes. This method is expected to cut the high cost of titanium thus making it attractive for increased applications. Dr. Arunachalam is widely travelled and has worked in a number of laboratories in U.K., U.S.A. and Sweden. He is a joint Editor of the "Transactions of the Indian Institute of Metals".

## World population year not an end in itself

AS the world entered the last month of World Population Year, (Dec., 1974) how is mankind reproducing itself? During this month, about 10 million babies were born throughout the world. At the same time, about 3 million people died. The result will be that the total population of the earth will increase by 7 million. This means that it will be swelling by about 200,000 each day, or about 2 $\frac{1}{2}$  each second.

The 10 million babies are born because about 20 million couples took 20 million independent actions resulting in pregnancy earlier in the year, and in the improved health conditions of today by far the greater proportion of these pregnancies have now come to full fruition.

The babies come into the world not knowing what colour they are, or whether they are rich or poor. But two-thirds of them will be

from poor parents, and one half will be from extremely poor parents. By December 31, therefore, the world had another about 5 million very poor babies. But they are born, and the world is committed to keeping them alive, giving them some kind of education and training, setting them to work, paying them for their work, and arranging that goods and services are available to them.

During the whole of this year the world will have grown by another 80 million people or so. This is the equivalent of adding a whole new Central America, or a whole new North Africa — or four new Oceanias. And as the chimes of midnight sound in the New Year, the process begins again. World Population Year was designed to draw attention to the challenge of man's future on this little planet, as it swings around a small star on the outer reaches of our galaxy.

## Scientific contribution

THE researchers of the Hydrology Institute with the Bulgarian Academy of Sciences are working jointly in four basic directions with other research units and economic organisations; optimization of the water economy system, theory and construction of hydrotechnical equipment, engineering and geological aspects of hydrotechnical construction on loess terrain and the

hydraulics of hydrotechnical equipment.

The Institute has assisted in finding practical solutions to problems connected with constructing many hydrotechnical and meliorative installations in this country and with maintaining them. The institute carried out researches into the deformation of dam walls and the efficiency of irrigation systems. The researchers there have also determined the norms and quotas of water consumption and irrigation for the purpose of designing meliorative equipment.

Essential results have been achieved in the study of the complex utilization of the country's water resources and in the study of water filtration.

The conclusions drawn by the researchers in regard to the length of hydraulic pressure head the movement of pressureless floods, processes and deposits in the river beds, etc. have been taken into account in designing practice here.

## Cassette library for blind students

The Gujarat University has started a novel media of instruction for the blind. Gujarati being one of the media of instructions in the university and there being no Braille books in Gujarati the university to remove the handicap of the blind students has started the cassette library. A young group of lecturers speak for tape recording on various subjects which are then listened by the blind students. As and when there are sufficient number of students these tapes can be lent to them. Poojya Mota of Hari Ohm Ashram has donated Rs. 5,000 for the blind students in Ahmedabad. The blind students found it easier to hear the tapes at their leisure and to study. The Fathers of the St. Xavier's College have volunteered to take up the responsibility of maintaining and running the library on behalf of the university. The university has found the experiment very encouraging.

# Job-oriented Management Training Programme

ON 20th October 1974, Senate Hall of the Gujarat University witnessed a mini-convocation, for awarding certificate to first ever batch of graduate and post-graduate unemployed students, who completed, job-oriented management training programme. Vote of thanks on the occasion was proposed by a student who was already selected for job by a leading Industrial House in Gujarat.

The function was unique for the students and the University because one of the major demands of students agitation in early months was job-oriented education and the University was not only able to visualize and plan such programme but also actually put successful with a span of just six months.

This was no miracle. In fact, soon after assuming office the present Vice-Chancellor, Shri Ishwarbhai Patel made a determined effort to bridge the wide gap that exists between the world of education and the world of work.

The half-million jobs scheme of the Government appeared to provide unique opportunity. Gujarat University made a unique departure by taking a bold decision to undertake programmes of job-oriented training. Catalogues of some 20 American Universities and 10 Indian Organisations, who were running such courses, were collected, and studied. Business and industrial organisations in private and public sectors, were consulted. Needs of the trained personnel was assessed in consultation with the Man-power Planning Department of the Gujarat Government. A scheme was prepared and presented to the Government. Curiously, announcement of the Five Management Courses, and the students agitation for 'Nave Nirman' almost coincided. The students movement also

cried for such programmes. But because of all preparations, as soon as the movement was over in March, within two days, the programme was launched very quietly yet with grim determination to make it a success.

For admitting 125 students in 5 management courses: (1) Office Management, (2) Banking Management, (3) Export Business Management, (4) Financial Management; and (5) Material Management about a thousand applications were received.

Besides the second batch of 125 training started on 20th November 1974, the university has started the following courses sanctioned by the Government under the Employment Graduate scheme from the 20th of December 1974. (1) Stenography & Secretarial Practices; (2) Photographic Art; (3) Marketing of Cotton Textiles; (4) Drug Analysis (Chemistry); (5) Drug Analysis (Microbiology); (6) Instrumentation; (7) Bank Recruitment Test Training Programme for Scheduled Caste & Scheduled Tribes candidates.

## Pre-degree course likely in T.N.

TAMILNADU is likely to adopt pattern of education consisting of 10-year schooling, two year pre-degree course and three-year degree course.

Indicating this in the Legislative Council the Education Minister, Mr V.R. Nedunchezian, said there would be no difficulty in introducing 10-year schooling and three-year degree course. The question was whether the two-year pre-degree course should be attached to higher secondary schools or should

junior colleges be started for the purpose.

He said the Madurai University Vice-Chancellor had favoured the scheme and the Annamalai University Vice-Chancellor had felt that it could be implemented if the difficulties in doing so were removed. The Madras University Vice-Chancellor's view was that instead of wasting money on new experiments, they should devote time on improving the present standards.

## Laboratory inaugurated

A NEW building called 'Home Management Resident Laboratory' was inaugurated at Ludhiana recently by Dr M. S. Randhawa, Vice-Chancellor of the Punjab Agricultural University. It will provide practical experience in home management to the students of the College of Home Science. Built at a cost of Rs 1.48 lakh and covering an area of 3,200 square feet, the new residence has three bed-rooms, each with attached bath, a spacious drawing-cum-dining hall, kitchen and a room (with a separate bath) for the Resident Adviser.

The subject of Home Management, said Dr (Mrs) J.K. Dhesi, Head of the Department, was compulsory for all under-graduates. Each post-graduate scholar has a stint in the residence. "There are seven students in a batch who in turn act as hostess, assistant hostess, head cook, assistant cook, dish washer and her assistant and money manager".

Dr Randhawa, speaking on the occasion said: learning the art of living was the core of home science education. There is no substitute for practical training. He advised the students to learn to live an orderly life in this laboratory. He expressed the hope that new findings and concepts would also be transferred to the wives of staff where these would find an acceptable home.

# Indo-German Science Cooperation Agreement

INDIA and the Federal Republic of Germany took another important step forward in implementing their far-reaching cooperation programme in modern fields of science.

A Science Cooperation Agreement was signed in New Delhi by Dr. Y. Nayudamma, Director-General of the Council for Scientific & Industrial Research, on behalf of the Government of India, and Professor K.H. Beckurts, Chairman of the German Federation of Research Institutions, on behalf of the Federal Republic of Germany. The agreement is a sequel to the Cooperation Agreement in the fields of scientific research and technological development signed in Jan-March, 1974), and the visit of Dr. Nayudamma and a delegation of Indian energy experts to the Federal Republic in September last.

The new agreement identifies areas of research and technological development in which the two countries will cooperate. Some of the areas thus chosen are Geo-Sciences, Materials Research, Non-Nuclear Energy Technology and Chemical Engineering, Electronics, Electrical Engineering and Mechanical Engineering. The agreement leaves scope for including additional fields of cooperation in the future.

Asked, which of the more than 30 specific fields, so far included in the cooperation catalogue would be likely to yield interesting results in the near future, the members of the German delegation mentioned the areas of metallurgy, gasification of coal, hydrological and geological studies, and an interesting project to evolve a new frequency and time-standard, which will define

the smallest unit of time with an accuracy of one thousandth of a second per year. Such standards of accuracy are required for astronomical studies and space research, which in turn have many down-to-earth applications.

Commenting on recent press reports questioning the economic viability of coal gasification as a substitute for other forms of energy, the German delegation members were quite optimistic. Professor Beckurts pointed out that according to recent studies made by the German firm of Lurgi, one of the leaders in the field, gas made from cheaply produced coal is already price competitive with liquid natural gas imported by the Federal Republic or with the revised natural gas prices to be charged by Holland. Considering India's vast resources of coal and taking into consideration the important aspect of foreign exchange conservation, coal gasification promises to be a very interesting proposition for India, the members felt.

## ATOMIC SEMINAR

Parallel with the new science cooperation programme, Indo-German collaboration in the fields of peaceful uses of energy and space research, which served as the model for the new agreement is progressing well. The recent seminar on "Utilisation Of Thorium In Power Reactors" at Trombay, was attended by five German nuclear scientists. Some of the new projects discussed at the seminar were questions of safe disposal of radioactive waste products, and the repair and maintenance of power reactors — all problems of high practical significance in which both India and Germany can benefit from their considerable fund of experience.

# Postal Courses in Science Planned

THE Mysore University is thinking of introducing science and vocational courses in the Institute of Correspondence Course, Vice-Chancellor D. Javare Gowda said at Mysore.

In an address read in his absence at a function arranged to distribute degree certificates to the second batch of graduates of the Institute of Correspondence Courses, Prof. Gowda said at present facilities for postal course in humanities and commerce subjects were available. He felt that the introduction of science and vocational courses may not pose problems. The institute, the first in South India, had become quite popular with students from not only various parts of the country but also among some foreign students.

Addressing the "Mini Convocation," Mr. D.V. Urs, Registrar of the University, said the universities should become the centres of change and this implied an urgent need for imaginative reconstruction of society.

"We cannot imaginatively reconstruct a society unless we gear the educational system to the cultural life of a society. In democratic countries the agencies that were traditionally set apart to change society had not lived upto their expectations. Now the youth felt that the universities should initiate the change, Mr. Urs added.

Mr. Urs felt it was his firm conviction that this change and transformation of society could not be ushered in by the professional revolutionaries. The events in Gujarat, Bihar and elsewhere were proof that sporadic movements could not easily dislodge the vested interests.

Mr. Urs indicted the Indian universities as "centres which promote vested interests. I am sure you are astonished to hear from the Registrar of a university such a statement, I know

no natural law or man-made law that stipulates that the Registrars should not think," he said.

Education in our society in the past served to promote caste, class privileges and prestige. "What we had today in the society is that there are only two classes, the ruled and the ruling. In these two categories we can safely bring the entire social panorama and analyse the ills and evils that are eating into the very vitals of our society," he added.

## Basic Imbalances in Education

THE multifarious problems plaguing our universities were due to a basic imbalance among the primary, secondary and higher education systems in the country, observed Dr. Nihar Ranjan Roy, the eminent scholar in the course of his address at the annual convocation of the Jadavpur University recently.

Dr. Roy regretted that much of the commitment made in the Indian constitution to eradicate illiteracy from the country remained to be fulfilled even after 25 years of independence. This was a "great disgrace to the nation", he said. According to him, "our primary education system" was "paralytic" and the secondary one was "devitalized". These were the "foundations" on which the higher education system in the country stood. The limited resources available should, therefore, be utilized for dissemination of primary education.

He was unhappy that there had been so far no attempt by authorities at the helm of affairs to go into the roots of the problems leading to the crises. During the past 15 years or so, the Universities in the country had un-

## PERSONAL

Prof. C.S. Jha has taken over as Director of the Indian Institute of Technology, Kharagpur, w.e.f. November 6, 1974.

Prof. Amlan Datta has taken over as Vice-Chancellor of North Bengal University w.e.f. November 8, 1974.

Shri B.D. Bhatt has taken over as Vice-Chancellor of Garhwal University w.e.f. December 1, 1974.

Prof. R.C. Mehrotra has taken over as Vice-Chancellor of University of Delhi w.e.f. December 8, 1974.

Shri M.R. Appa Rao has taken over as Vice-Chancellor of Andhra University w.e.f. December 18, 1974.

Dr. Jagdish Lal has been appointed Director of IIT, Kanpur.

Shri S.P. Pande has been appointed Vice-Chancellor of G.B Pant University of Agriculture and Technology, Pantnagar.

Shri Bimal Chandra Kundu has taken as the first Registrar of Bidhan Chandra Krishi Vishwa Vidyalaya w.e.f. October 14, 1974.

Shri M.S. Ramamurthy has taken over as Registrar of Indian School of Mines w.e.f. December 12, 1974.

dergone a tremendous change as the foreign Universities. But, neither the University centres nor the authorities seemed to have paid much attention to this matter. Though modernization of textbooks, examination reforms, participation of students in University administration, facilities for research and sports were necessary, they would not serve as a panacea for all troubles, he observed.

The Chancellor of the University, Mr. A.L. Dias, made an earnest plea to the student world to start a campaign not only for examination reform but also to guarantee the "fairness and integrity" of the examination system.

## THESES OF THE MONTH

### PHYSICAL SCIENCES

#### Mathematics

1. Mehrok, Tejenderjit Singh. Some estimates of univalent and multivalent analytical functions. Kanpur University.

#### Operations Research

1. Sen, Prasenjit. On some network and reliability optimization models in operations research. University of Delhi.

#### Physics

1. Agrawal, Govind Prasad. Application of angular spectrum to optical coherence and nonlinear optics. I.I.T., Delhi.
2. Lakshmanan, M. Studies on the dynamics of certain nonlinear systems and field models. University of Madras.
3. Lakshman Rao, J. Studies on the optical absorption spectra of some first group transition metal ions in certain inorganic and organic crystals. Venkateswara University.
4. Mallikarjun Rao, S.P. Ultrasonic studies in liquid by reverberation technique. Osmania University.
5. Mohan, S. Studies in solid state physics: Effect of temperature on electrical conductivity and Hall Effect in thin films of silver and copper. Venkateswara University.
6. Nagi Reddy, B.P. Studies in low temperature: Elastic and thermal properties of some ferrites. Venkateswara University.
7. Prabhat Singh. Electron diffraction studies of some vacuum deposited semiconducting thin films. University of Poona.
8. Ranganath, G.S. Some theoretical studies on the optical properties of single and polycrystalline media. Bangalore University.
9. Sengupta, K. Study of the equatorial ionosphere. Gujarat University.

#### Chemistry

1. Dasguptavastha, Bibhash Chandra. Studies on the preparations, reactions and structures of 4-methyl azobenzene-2-sulphenyl compounds. University of Gauhati.
2. Dutta, Krishna. Investigation on the analysis of trace amounts of inorganic substances. University of Bardwan.
3. Gandhi, Vasant Ganapatdas. Studies in polymerization with Ziegler-natta type catalyst systems. University of Poona.
4. Joshi, Jayantilal Durgashanker. Studies in mixed ligand chelates. M.S. University of Baroda.
5. Kulkarni, Pralhad Shivaram. Studies on unimolecular ion decompositions induced by electron impact. University of Poona.
6. Maladkar, Nilkanth Keshav. The metabolism of aromatic aminoacids L-tyrosine and L-phenylalanine by streptomyces aureofaciens and its relation to the biosynthesis of chlortetracycline. University of Poona.
7. Mali, Ragho Shivaram. New syntheses of heterocyclic compounds. University of Poona.
8. Mali, Shivaji Ishwar. Kinetics of fast reactions in solution. University of Poona.
9. Mandal, Prabhat Kumar. Studies on the viscosity of electrolytic solutions. University of Burdwan.
10. Namjoshi, Anant Ganesh. Synthesis of heterocyclic compounds. University of Poona.
11. Patel, A.R. Physico-chemical studies on never dried cotton. Gujarat University.
12. Rangnath, Shelar Ashok. Synthesis and study of some biologically active compounds. Shivaji University.
13. Sai Prakash, P.K. A kinetic study of some aspects of oxidation of organic substrates. Osmania University.

14. Shrivastava, V.B. Hetero and unsaturated carbohydrates. Gujarat University.

15. Trivedi, I.M. Grafting of vinyl monomers textile fibres. Gujarat University

16. Uppal, Kharak Singh. Studies of new stationary phases and their application in gas liquid chromatography. University of Poona.

#### Earth Sciences

1. Achuta Rao, Dasu. Air borne magnetic surveys over certain regions in India and their evaluation in relation to geology and structure. Andhra University.
2. Ghare, Mukund Anant. Stratigraphy and palaeontology of the Bagh beds of Narmada Valley. University of Poona.
3. Subba Rao, Chandu. Studies on some aspects of hydrogeology of Chandrapalem Basin. Andhra University.
4. Tapaswi, Prakash Madhusudan. Bivalvia from the upper cretaceous of Trichinopoly District, India. University of Poona.

#### Engineering & Technology

1. Chikate, Padmakar Prabhakar. Static and dynamic analysis of machine tool welded structures and stiffness of joints, used in machine tools. University of Poona.
2. Majumdar, Alok Kumar. Flame stabilization by wall ricees. University of Burdwan.
3. Prem Vrat. On the optimisation of rotating float in the closed loop stochastic inventory systems. I.I.T. Delhi.
4. Saxena, L.M. Investigation of heat transmission in four stroke C.I. engines. University of Jabalpur.

### BIOLOGICAL SCIENCES

#### Anthropology

1. Chakravarty, Manjula. Inheritance of planter intertriradial ridge-count (a-b, b-c, c-d, a-e or a-f, d-e or d-f)." University of Delhi.

#### Biology

1. Deoray, Shivram Dagaji. Studies on fungi in the rhizosphere of the grape vine, *Vitis vinifera* (L.). Var. Thompson seedless with special reference to their biochemical activities. University of Poona.
2. Ramachandran Nayar, P.V. Studies on the primary production in the Indian seas. University of Cochin.
3. Saved, Shokat Munir. Studies on wound infection in Baroda with special reference to bacteriological dynamics, the effects of nutrition, immunoresponse and therapy on the process of healing. M.S. University of Baroda.

#### Botany

1. Arora, Om Prakash. Cytogenetical study of some ornamental verbenas. Kanpur University.
2. Kshirsagar, Mainavati Krishnarao. In vitro studies in ferns. M.S. University of Baroda.
3. Kushari, Debi Prasad. Physiological and biochemical control of adventitious root formation in hypocotyl cutting of *Phaseolus mungo* (L.) and leaf cuttings of *Coleus blumei* (Benth). University of Burdwan.
4. Rishi, Yeshwant Vishnupant. Nitrogen metabolism of leguminous plants. University of Poona.

#### Zoology

1. Jan, Nisar Ahmad. Qualitative and quantitative studies on the food of some adult and young fishes from Dal Lake, Kashmir, correlated with hydrological factors. University of Kashmir.

2. Khan, Mohamed Ziauddin. Studies on the self-differentiating and induction capacities of the post-nodal pieces treated with nucleosides. University of Poona.

3. Munjal, Kothanda Raman. Cytological, cytochemical and autoradiographic studies of spermatogenesis in *Gryllo-talpa fossor* Scudder. University of Delhi.

4. Pandhare, Arvind Babanrao. Morphological, histochemical and cyrochemical study of certain glandular structures of the earthworm and the leech. University of Poona.

5. Peer, Santosh. A study on the Weberian ossicles of some Kashmir fishes with their development in *Schizothorax esocinus* Hackel. University of Kashmir.

6. Sringararchari, A. Lipid metabolism in relation to muscle function of the denervated muscle of a selected vertebrate. Bangalore University.

7. Telang, Nityanand Trimbak. In vitro studies on the effects of hydrazine on the morphogenesis of chick embryos in understanding the mechanism of its action. University of Poona.

#### Agriculture

1. Konde, Bhaskarrao Kashiram. Studies on streptomycetes from the soils of Maharashtra State. Mahatma Phule Krishi Vidyapeeth.

2. Kore, Sadashiv Shankar. Studies on genus curvularia in pests in Maharashtra State. Mahatma Phule Krishi Vidyapeeth.

3. Mishra, Chander Hari. A study of heterosis and heritability of some economic characters in hot set and locally adopted varieties of tomato. Kanpur University.

#### Home Science

1. Sharada, B. Biochemical assessment of riboflavin nutritional status. Venkateswara University.

### SOCIAL SCIENCES

#### Psychology

1. Pereira, Jeane-Marie. Career women: A psychological study. Osmania University.

#### Sociology

1. Adyanthaya, Hira Bhojraj. The rural immigrants in an urban setting. University of Poona.

2. Sharma, Someswaram Subbaraya. Gandhian approach to social change: A comparative study. University of Poona.

#### Economics

1. Mehta, S.B. Some aspects of price behaviour in India during 1951-52 to 1968-69. Gujarat University.

2. Raghavachari, Vimala. The state and the Indian sugar industry, 1956-70. University of Poona.

3. Ranganathan, Hemmige Narasimhachar. Vital registration in Maharashtra. University of Poona.

#### Education

1. Deshpande, Balkrishna Sharmarao. Madhyayugeen Marathi santvangmayadara anaupacharik shikshan: Mukhyatve Sri Sant Gyaneshwar, Namdev, Eknath, Tukaram, Ramdas. University of Poona.

2. Karmali, Ravindra Pandurang. A comparative study of the development of education in the new conquests and the old conquests of Goa between 1910 and 1961. University of Poona.

3. Kaul, Kamal Kumari. Horizontal versus vertical development of intelligence. Kanpur University.

### HUMANITIES

#### Philosophy

1. Barnabas, Manorama. A study in the philosophy of social change: The ideas of some liberal thinkers of 19th

century Maharashtra and their relevance to modernization. University of Poona.

2. Kocher, Manjula. Shrimad Bhagwat Gita kee samkaleen vyakhya: Tilak, Gandhi va Aurobindo ke vishesh sandharbh mein. University of Indore.

#### Linguistics

1. Dahal, Ballabh Mani Sharma. A description of Nepali: Literary and colloquial. University of Poona.

2. Takawale, Prabhakar Anandrao. A linguistic study of Ardha-kathanaka. University of Poona.

#### Literature

##### Sanskrit

1. Grover, Nilam. Anandalahari and its commentaries. University of Delhi.

2. Jha, Parmanand Devirahasytraya aur Gaytri. K.S. Darbhanga Sanskrit University

3. Sharma, Shambhu Datt. City-life as depicted in Sanskrit literature. University of Delhi.

##### Hindi

1. Barhate, Balkrishna Sadashiv. Adhunik Hindi aur Marathi bhashaon mein prayukt sanyukt kriyaon ka adhyayan. University of Poona.

2. Bhardwaj, Narayan. Comparative study of historical novels in Hindi and Gujarati literature. M.S. University of Baroda.

3. Hari Bhan Singh, Manasottar Ram Kavyon mein lok tatwa. Kanpur University.

4. Kohli, Surinder Kumar. Hindi Krishan kavya parampara ke sandharbh mein adhunik Krishan kavya ka mulyankan. University of Jammu.

5. Malik, Promila. Premchandottar Hindi upanyas sahitya (upto 1950) mein Gandhivid. University of Delhi.

6. Mishra, Lalita. Acharva Shiv Poojan Sahai Lee anekmukhi Hindi sewa evam kriti ka mulyankan. Kanpur University.

7. More, Shivaji Hari. Sevadas Niranjan vyaktivi aur kritiy: Ek anushilan, 1698 V.S. to 1798 V.S. University of Poona.

8. Sarish Kumar. Ritikaleen virkavya mein ritutwa. University of Delhi.

9. Sharma, Bal Krishan. Dogri aur Hindi mein samyatatha vaishamya. University of Jammu.

10. Tiwari, Ramji. Swaranteryottar Hindi samiksha mein kavya mulya. University of Poona.

##### Urdu

1. Khan, Salahud-Din. Shefta's life and works. University of Delhi.

##### Marathi

1. Kadwe, Krishna Kediji. Marathi Kadambachya samiksha vangnayache swarup ani vikas, 1965 to 1935. University of Poona.

2. Pundlik, Pawar Sudhakar. Maratheshbaitel partrarup gadyache vangnayeen samikshan, 1650 to 1750. Shivaji University.

3. Vyawahare, Sharad Bapurao. Hingoli talukyatil lok-sahityacha vivechak abbayas. Marathwada University.

##### Tamil

1. Indira, P.S. A critical study of Tiruvacagam. University of Madras.

##### Kannada

1. Mallanagouda, Biradar Sanganagouda. Nagavarma-II as a grammarian. Karnatak University.

### Telugu

1. Madannihorao, Gorantla. A critique on Dhurjati. Andhra University.
2. Narayana Rao, Velcheru. Revolution in modern Telugu poetry. Andhra University.

### History

1. Hanumantha, Krishnaswamy Ranganathan. Untouchability in Tamilnad: Ancient and medieval upto 1500 A.D. University of Madras.

2. Natrajan, Champaklakshmi. Society culture in the Deccan from 2nd century D.C. to 10th century A.D. Marathwada University.

### Geography

1. Deka, Phani Dhar. Spatial and temporal stabilities of the Indian and the American urban system: A comparative study. University of Gauhati.
2. Parmer, Jawansinh Kodarbhai. Urban geography of Kapadwanj. M.S. University of Baroda.

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Post	Department-wise number of probable vacancies		
	Education	Physics	Life Sciences
Professor Lecturer	1 2	1 —	— 2

### 2. QUALIFICATIONS AND PAY SCALES:

(a) Professor: Rs. 1100-50-1300-60-1600.

(i) A first or second Class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject concerned.

(ii) Either a degree of the Doctorate or published work of high standard.

(iii) Not less than 10 years experience of Post-graduate teaching and experience of successfully guiding research. (Details must be given).

In the case of a candidate of exceptional merit the Executive Council may, on the recommendations of the Selection Committee and with the prior approval of the Kudhipati, relax any of the qual-

ifications mentioned in (i), (ii) & (iii) above.

(b) Lecturers: Rs. 400-40-800-50-950. Qualifications same as shown at 2 (a) (i) for the post of Professor. A research degree in the subject or experience of teaching degree and/or post-graduate classes will be a desirable qualification. Knowledge of Hindi will be desirable

#### NOTES:-

(i) For the post of Lecturers in Education the candidates should have ob-

4. Applications should be made on a plain paper giving name, date of birth, particulars of academic career (from High/High Secondary School onwards with attested copies of marks statement), experience, published research work etc. along with a crossed Indian Postal Order of Rs. 7/- marked payable to Registrar, University of Indore, Indore. Applications should reach the undersigned not later than the 31st January 1975. The envelope should be marked "Application for the post of \_\_\_\_\_ Department of \_\_\_\_\_". Separate applications should be made for each post.

5. Candidates already in service should apply through proper channel. Candidates selected for interview will be required to travel at their own expenses. Those who have applied for the posts of Lecturer in the Department of Life Sciences in response to the previous advertisement dated 24-12-73 need not apply again but only intimate whether their applications be considered.

6. The University reserves the right to fill up or not to fill up the posts advertised and/or to call only selected candidates for interview.

7. The number of posts can be increased or decreased according to requirements and sanction.

A.G. Sharma  
REGISTRAR

## International Congress of Mathematicians

DR. V. Krishnamurthy, Acting Deputy Director, BITS, was one of the few Indian mathematicians who participated in the International Congress of Mathematicians held at Vancouver, British Columbia, Canada. He presented a paper on "A Problem of Tree Counting Related to Finite Maximal Connected Topologies".

The first International Con-

gress of Mathematicians was held in 1897 in Zurich. The present one was the 17th and about 1000 mathematicians from all over the world attended it. The sequence of the Congresses was interrupted twice during the two world wars, otherwise it has been held once every four years since 1900, when it met in Paris. The purpose of the Congresses is to exchange and disseminate information

about latest mathematical research and to make personal contacts possible among mathematicians of the world.

After the Second World War, at every Congress two high ranking Mathematicians were selected and awarded the Fields' Medal in recognition of their outstanding contribution to Mathematics. Last year the Fields' medals went to Prof. H. Bombieri of Italy for his work in Partial Differential Equations and Number Theory and to Prof. D. Mumford of the United States of America for his work in Algebraic Geometry.

## National Scholarships for Study Abroad, 1975-76

Applications are invited from Indian nationals and subjects of Sikkim for award of 50 (fifty) National Scholarships for study abroad covering (i) Undergraduate Studies (first degree course), (ii) Post-graduate Studies leading to Ph.D. Degree, and (iii) Post-doctoral Research/Specialised Training.

Eight scholarships are reserved for undergraduate studies (four in the field of Humanities and Social Sciences and four for Natural and Physical Sciences); thirty scholarships are earmarked for post-graduate studies leading to Ph.D.; and twelve scholarships will be awarded for post-doctoral research/specialised training. Regarding (ii) & (iii) above, awards will be made so as to secure a dispersal of the scholarships among different subject-fields, having regard to the special needs of the country.

**SUBJECTS OF STUDY:** Scholarships for undergraduate studies are restricted to the following subjects:

**HUMANITIES & SOCIAL SCIENCES:** 1. English Language & Literature (for universities in U.K. only); 2. French Language & Literature (for universities in France only); 3. British/European History/Ancient Greek & Roman Studies; 4. Economics; 5. Sociology and Anthropology. **NATURAL AND PHYSICAL SCIENCES:** 1. Physics; 2. Chemistry; 3. Mathematics; 4. Biological Sciences; 5. Earth Sciences (Geology, Geography, Geo-Chemistry, Geo-Physics, etc.).

### ELIGIBILITY

(a) **UNDER-GRADUATE STUDIES:** Qualifications: Candidates should have passed first degree examination — (B.A./B.Sc./B.A. (Hons)/B.Sc. (Hons)) — of an Indian university with first or high second class or 56% marks in lieu thereof. Alternatively, they should have obtained first class at the previous public examination. Those who have already secured admission in a university/college abroad may be given preference. Age: Between 19 and 24 years as on October 1, 1975.

(b) **POST-GRADUATE STUDIES LEADING TO PH.D. DEGREE:** Qualifications: First class Master's degree in Engineering/Technology or a first class Master's degree in other subjects (where no division class is awarded, minimum 60% marks will be taken as first class). Those who have already secured admission in a university/college abroad will be given preference. AGE: Below 28 years as on October 1, 1975—relaxable upto 3 years for SC/ST candidates.

(c) **POST-DOCTORAL RESEARCH/SPECIALISED TRAINING:** Qualifications: A doctorate degree in the subject-field and at least five years' experience in research/teaching/industry. Age: Below 33 years as on October 1, 1975 — relaxable for SC/ST candidates.

**MEANS TEST:** Only those candidates whose parents'/guardian's income from all sources (during the period Oct. '75 — Sept. '76) would be less than Rs. 1,000 per month are eligible. If the applicant is employed his/her salary will also be taken into account.

**LAST DATE** for receipt of applications is January 31, 1975. Forms will be supplied upto January 25. For detailed terms and conditions, application form, etc., please write enclosing an unstamped self-addressed envelope (28 cm x 12 cm) to:

GOVERNMENT OF INDIA  
MINISTRY OF EDUCATION & SOCIAL WELFARE

NS-5 Section 1, Room No. 101, Wing, Shastri Bhavan,  
NEW DELHI-110 001

davp 74/381

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## **And his future was bright once again.**

A year ago, there was a day that threatened to be his darkest. His retina needed immediate surgery, it needed a laser beam. And it was not available in India. A bright future hung by a slender thread.

We were contacted. The call went around continents and the hunt began. Seconds ticked by, as Air-India staff combed hospitals around the world. The tension ended when the equipment was finally found in Mannheim. We flew the child to Frankfurt, another airline pooled in its effort and flew him on to Mannheim.

Today, when he chases a butterfly, picks a bunch of flowers, loves things bright and beautiful, we feel proud of our job. The job of carrying people from one place to another. Sometimes, even from darkness to light.

We have a wide network of communication facilities to help you in any situation. We have 129 offices and 34 destinations the world over. So you have friends in almost every part of the world. Friends who go out of their way if you should need something out of the way. Try us and we'll make you an Air-Indian. For ever and ever.



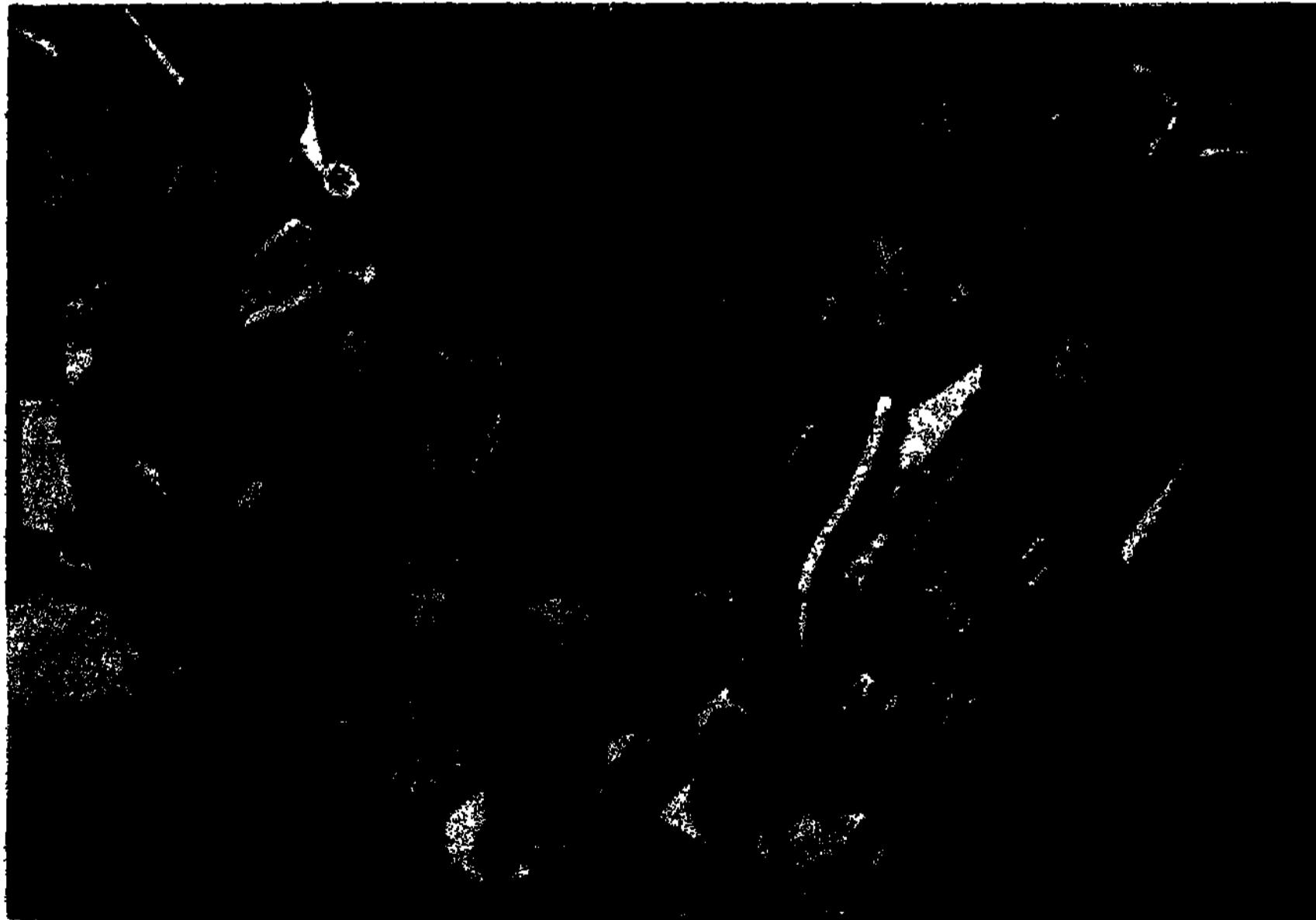
# UNIVERSITY NEWS

Some Major Tasks  
before Indian Varsities

CHRONICLE OF HIGHER EDUCATION & RESEARCH

★ February 1975 Re. 1.5

## At the 62nd Indian Science Congress



Dr. (Mrs.) Asima Chatterjee (President), Mrs. Indira Gandhi, Prime Minister of India, Prof. R.C. Mehrotra, (Vice-Chancellor, Delhi University) and Lt. Governor of Delhi.

## CLASSIFIED ADVERTISEMENTS

**PUNJABRAO KRISHI VIDYAPEETH,  
KRISHINAGAR, AKOLA**

Advertisement No. BCA/874.

"**APPLICATIONS** in the prescribed Forms are invited on or before 28-2-1975, for the following temporary posts in the pay scale of Rs. 400-40-500-50-950/-

1. Assistant Professor of Animal Husbandry & Dairying.
2. Assistant Professor of Agricultural Extension.
3. Assistant Professor of Statistics.
4. Assistant Professor of Statistics.

**Qualifications for the posts at Sr. No. 1 and 2 above.**

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with at least 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

*And*

(b) Master's degree in Agriculture (in the subject concerned) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research and with at least 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

**Qualifications for the posts at Sr. No. 3 and Sr. No. 4 above**

(a) Bachelor's degree in Science of any University or in Agriculture or Veterinary Science of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with at least 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester)

*And*

(b) Master's degree in Science with Statistics of any University/Institute with papers only or with papers and research and with at least 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

### 2. Age

Not more than 30 years as on 28-2-1975 relaxable upto 5 years in case of

candidates belonging to Scheduled Caste/Tribes/Other Backward Classes/Nomadic Tribes. The age limit will not apply to persons already in service of the Government of India/State Government or this University or any other University.

3. For details and application Forms please write to the Assistant Registrar, (Establishment), Punjabrao Krishi

—	2 posts	In the Faculty of Agriculture.
—	4 posts	
—	2 posts	In the Faculty of Veterinary Science.
—	1 post	

Vidyapeeth, P.O. Krishinagar, Akola (Maharashtra), enclosing (i) a crossed Indian Postal Order for Rs. 2/- towards the cost of application Form and (ii) a self addressed unstamped envelope of the size of 10 c.m.s. x 23 c.m.s. Request for Forms must specify advertisement No., Name of the post and Sr. No. of the post.

4. Applications complete in all respects should reach the Registrar, Punjabrao Krishi Vidyapeeth, P.O. Krishinagar, Akola (Maharashtra) together with the registration fee of Rs. 8/- (Eight only) (non-refundable) paid through a crossed Indian Postal Orders latest by the 28-2-1975.

5. Incomplete applications and those received after the due date shall not be considered and no correspondence thereon shall be entertained. Payment of all fees must be made through Crossed Indian Postal Orders payable to the Comptroller, Punjabrao Krishi Vidyapeeth, Akola. Persons already in service must apply through proper channel.

6. The University does not bind itself to call all the qualified candidates applied for interview by the Selection Committee. Those called for interview, however, will have to appear for the same at their own cost.

P.O. Krishinagar, S.P. Kokate  
Akola. REGISTRAR

Dated the 22-1-75

**PUNJABRAO KRISHI VIDYAPEETH  
P.O. KRISHINAGAR, AKOLA  
(MAHARASHTRA)**

Advertisement No. BCA/874

**APPLICATIONS** in the prescribed Form are invited on or before 28-2-1975 for the post of Assistant Professor in

the Faculty of Veterinary Science carrying the pay scale of Rs. 400-40-500-50-950/- in the following subjects:-

1. Anatomy—2 Posts
2. Bacteriology — 1 Post
3. Animal Nutrition—1 Post

### (2) Qualifications

(a) Bachelor's degree in Veterinary Science of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

*And*

(b) Master's degree in Veterinary Science (in the subject concerned) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research only with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

### (3) Age

Not more than 30 years as on 28-2-75. Relaxation in age is allowed to the employees of this or any other University in India, Central and State Govt., Scheduled Caste/Tribes and Other Backward Classes to the extent permissible under rules.

(4) Prescribed application Forms and instructions are obtainable on request from Assistant Registrar (Establishment) of this University on payment of Rs. 2/- as application Form Fee. Applications complete in all respects must reach the Registrar, Punjabrao Krishi Vidyapeeth, Krishinagar, Akola, Maharashtra, together with an application registration Fee of Rs. 8/- not later than 28-2-75. Payment of fees must be made through crossed Indian Postal Orders payable to the Comptroller, Punjabrao Krishi Vidyapeeth, Akola, Maharashtra. Request for Forms must specify advertisement No., name of the Post and item No. and should accompany a self-addressed unstampede envelope for each post, atleast of the size of 23 x 10 cm<sup>2</sup>, indicating thereon the post(s) for which Form(s) is/are required. Separate application with separate Fee, is required for each post.

Persons already in the services must forward their applications through proper channel.

If required candidates must appear for interview at his own cost.

P.O. Krishinagar,  
AKOLA  
Dated 22-1-75

S.P. Kokate  
REGISTRAR

# UNIVERSITY NEWS

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*A Monthly Chronicle of  
Higher Education*

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*Opinions expressed in the articles and  
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necessarily reflect the policies of the  
Association.*

Editor : ANJNI KUMAR

## 62nd Science Congress

# P. M. Praised Indian Nuclear Achievements

OPENING the 62nd session of the Indian Science Congress in Delhi, the Prime Minister, Mrs. Gandhi warned the nation that forces of violence and disruption were at work in the country.

Mrs. Gandhi said that internationally the desire to dominate had not diminished, but had taken on more "subtle" forms.

Referring to the recent peaceful nuclear explosion by India, Mrs. Gandhi said: "There is increasing recognition within the country and abroad of the quality of work done by our scientists, especially in nuclear science and agriculture." She described the experiment as a "good job, neatly done and without fuss."

"Whatever the motivation of the Indian scientist, he can hardly escape the larger objective of Indian science -- to create a more modern and science-minded society free from superstition and narrowness. Regardless of the protests from our critics, we must firmly keep in view our main aim, that is, the eradication of poverty.

"Should not the capabilities of our scientists be used to find quick solutions to our urgent problems, for the increase of agricultural production, for more effective family planning programmes, for the improvement of communications? Much work in these spheres has been done in our country but a great deal remains and research must be intensified. It is the peaceful and beneficial use of nuclear energy that attracts us. Can we afford to ignore its great potential for adding to our resources and to energy?" she asked.

She said the immediate problem before the nation was to increase food production and fuel output. ~~if the talents of our agricultural scientists should be concentrated on finding new methods and reactivating old ones~~

where necessary of conserving resources of water and fertilizer."

The five-day conference discussed the energy crisis, import substitution and reform in the examination system. The delegates, who attended the conference included scientific disciplines such as botany, engineering, physics, chemistry, geography and physiology.

## Asima Chatterjee's warning

Dr (Mrs) Asima Chatterjee, Dean of the Faculty of Science and Head of the Department of Chemistry, University College of Science, Calcutta, who is the first woman President of the Congress, in her address warned the Government that unemployment among science graduates in India was assuming grave proportions.

Dr. (Mrs) Chatterjee said, "This can lead all too easily to disappointment, disenchantment, frustration and even resentment amongst some of our ablest young citizens. This is not only a problem for our students, but will become a problem for society."

Referring to the unrest in the student world, Dr Chatterjee said this is an outward manifestation of their critical attitude and is not confined to India alone. But the discontent of the younger people is not due to any lack of respect for science; rather science is receiving a sort of extreme respect which could be described as fear, she added.

## Students' agitations

"The spectre of unemployment is no doubt a drag on their ability to devote to study; but that is not the sole reason for the general display of anger. Because even in the more advanced countries,

(Continued on page 11)

# **SOME ACADEMIC IMPERATIVES**

**MAHAVIR PRASAD JAIN**

Several 'imperatives' have, since independence, dictated why English should be taught and learnt in India. 'The status imperative' has perhaps exerted the greatest pull: otherwise it will be difficult to explain the proliferation at lower levels of English-medium schools after independence; the lucrative business of English teaching 'clubs', particularly for ladies; the rather gibberish lacing of conversation with English at 'socials' or at 'critical' social/formal occasions when one has to flaunt superior airs; the generally charged air of importance around 'Englishwallas.' The 'political imperative' has, in a multilingual nation, demanded that it be the 'link' language. The 'commercial imperative' has pleaded for it in the interest of effective and efficient participation in international trade and commerce. The 'cultural imperative' has highlighted the cultural fall out of learning such a 'rich' language as English. In the midst of these, the 'academic imperative' has tried to claim that English, both at school and college levels, be taught and learnt for overriding academic considerations.

While every other imperative seems to 'succeed', it appears that, by and large, the academic imperative has come a cropper. English continues to flourish for 'socialites', for the 'commercial' world, for cultural and political needs as well, but the academic world is progressively starving. In general terms, the harassed student, semi-literate in English for his academic needs, the faltering researcher unable to comprehend research literature available in English and later on haltingly and with labour pains trying to deliver his research findings in it, the helpless teacher giving up in near total despair, are unfailing indicators of the state of English for academic needs. No less symptomatic of it is the shifting official policy from no English, to optional English, to limited English.

At this point, then, it is not unreasonable to ask: who has failed the academic world in the teaching and learning of English for overriding academic considerations?

It is a multi-factor failure. The chauvinist of 'Indianness' in Indian education; the new-breed 'folklorist' professing that a certain minimal standard of English very often quantified at 2,500 words—English with 250-350 structure — will serve the academic needs of the learner; the 'prescriptive teacher' more

concerned with the outdated details of English grammar than with the living language; the language-policy 'expert/specialist' in the layman in the administrative echelons of educational planning in the country through his 'fiats' that now English will be taught from class II, now from class V, now it stands abolished at school level, now it is optional, now it can be taken care of through remedial/intensive teaching at the university level; the traditional university graduate-teacher of English unable to divest himself of 'Shakespearean-Miltonic-Wordsworthian burden' of a sort; the learner in a hurry to learn English with little pain and no tears; the 'entrepreneur' of the English-teaching industry the world over raising visions of speed learning — all have contributed to the confusion and consequently the failure.

It is significant to note that English is being taught and learnt with a high degree of 'success' as a status symbol precisely because there is no confusion and no ambiguity about what is to be learnt and how.

At the heart of the failure in India of English language teaching and learning for academic purposes there is a crippling inability to unambiguously identify what English is to be taught and learnt and how.

Briefly, the imperatives of learning English for academic purposes are: (a) it is both the medium of instruction and examining of higher learning in India, particularly in the area of science and technology; (b) it is one of the major languages cope with the latest in the world of advanced learning and research. The following figures support contention (b): in science and technology "more than a million original papers and some fifty thousand books, and about the same number of reports" are at present published every year; in social sciences too published research is formidable. No translation industry at the national level can cope with it. The only possible way of keeping in touch with current knowledge is to learn English. It is an academic imperative in the educational world of today. And what we should learn is not Balkanized English—English for science and technology, English for social sciences, English for architecture. We should learn English for academic purposes. It amounts to learning English at a very competent level. And there is no short cut. □

## Some Major Tasks

C.N. BHALERAO

A UNIVERSITY is an academic fellowship of students, teachers and researchers, devoted to the pursuit of truth and excellence. Its basic purpose is to impart knowledge and education about the physical and human world in which we live and man's moral and spiritual purpose so as to enable students to relate themselves to it in a better way, and to provide them opportunities for an all-round development of their personalities. As an institution devoted to the pursuit of truth, it is also continuously engaged in advancing the frontiers of knowledge, thereby equipping man with intellectual tools and resources to control himself and his environment for his progress. A university is an institution of education and learning "where the mind is held high, where knowledge is free, where words come from the depth of truth, and where the world is not broken into fragments by narrow domestic walls".

In order that a university should play a dynamic role in man's progress and possess social relevance, it must be related to the realities of contemporary society and the issues of national development and international peace, order and progress. If its curricula and researches are not related to these realities and issues, it will become dysfunctional to society.

It is now recognised that education is a crucial variable in national development which affects certain basic relationships. Not only has the importance of education as a critical input in social and economic development increased many-fold in modern times; it also seems to have become a dynamic transformer of motivations, life-styles, and aspirations, and a major agent of socialisation. Education acts as an instrument for realising the goals of both democracy and modernization by imparting a psychological orientation and intellectual training, and developing a scientific and technological infrastructure.

Are the Indian universities playing any significant role in educating our young men and women so as to equip them to contribute effectively to local and national development as responsible citizens? What are the basic problems facing the universities in India? In this brief paper based on observation of some of the universities of North India, it is proposed to draw attention to some of our problems, not because they are not known to our political leaders and educational policy-makers, but with a view to focussing attention on a few critically important issues which need to be considered in any strategy of university reforms. In fact, many of the problems of university education in India are widely recognised; what is basically lacking is purposive and sustained action to improve the educational system.

One of the most crucial problems facing the Indian universities today is the increasing encroachment of politics on the universities and their politicisation. This refers to determination of academic policies to suit political ends, political complexion of the executive councils, caste, sub-regional and party politics among the students and teachers, and constant political pressures and influences exerted by ministers and party leaders. In a democratic system, it is true that poli-

tics cannot be avoided; indeed, it exposes the universities to some vital sections and needs of society. But the general quality and character of politics in India is such that, as in the sphere of administration, it has undermined the academic standards of the universities and resulted in creating an atmosphere of intrigues, politicking and indisciplines. With such politicisation, the criteria and equipment for academic success have also shifted. An academically-oriented, honest, devoted and able Vice-Chancellor who is independence enough to displease the politicians and political leaders may come to be regarded as an inefficient administrator. Similarly, if politics and political connections can help the teachers to get academic posts and promotions, why should a teacher take interest in arduous study and research and work hard to deserve promotion? The universities are witnessing today the emergence of a new class of "teacher-politicians" and "politically-oriented student leaders". Both pose a problem in developing proper academic standards and the effective functioning of the universities. It would thus appear that improvement in the standards and performance of the universities will depend upon the emergence of dynamic, purposive and committed political leadership, eschewal of politics in policy-making in the universities, an awareness on the part of political parties of the need to respect the freedom and autonomy of the universities, and appointment and promotion of teachers on the basis of devotion to the profession and proved academic competence.

Another crucial problem facing the universities in India is presented by their liberal and "open door" policy of admissions. As a commentator points out, the real cause of our malady "is surely that the universities are grossly over-crowded with people who should never have been there". Excepting students studying at professional and technical institutions and science departments, a large number of the rest of the students at the under-graduate level, are not serious about their studies and only waste the facilities available to them. Partly as a result of over-crowding at the universities, the gap between the output of graduates and the capacity of the economy to absorb them has widened. The growing hiatus between a rapidly expanding educational output and lagging opportunities of employment and economic mobility can, as evidenced by recent student protest movements, lead to frustration, separatist identities and economic behaviour, and feed into the general "politics of protest". The only feasible answer to this lies in adopting tougher standards of admission, making education work-oriented, and creating expanded opportunities for education and training at professional institutions.

The third problem which needs urgent attention relates to uninspiring teaching, obsolete academic courses and syllabi, and archaic methods of evaluation. In general, courses at the universities and colleges are taught in a stereotyped manner with standardised problems and set approaches. The emphasis in teaching continues to be more on the preparation

of students for examinations and less on stimulating the students' interest in the subject and sharpening their intellect. As the Education Commission has observed: "The subjects in which the teachers lecture do not often involve their intellectual passion, nor do they make experiments in methods of teaching. There is little enthusiasm for learning or discovery of new truths because research is not considered an integral part of their duties". The syllabi framed for various subjects also do not show much imaginativeness. They do not seek to absorb the vast changes which have taken place in the academic subjects in western universities or to respond to the realities, issues and challenges of contemporary society. In social science disciplines, for instance, the courses could be made inter-disciplinary and incorporate recent theoretical and methodological advances. The traditional examination system too has been rightly criticised and considered as completely out-moded by the Education Commission and educational experts. As early as 1951, the Union Public Service Commission commented: "A written test no doubt is some evidence of the intellectual development of the candidates but with the widely acknowledged deterioration in the standard of university degrees, it has become, in many cases, more an evidence of the power to memorise book knowledge than of genuine mental qualities". There is clearly a need to evolve a continuous and purposive method of evaluating the performance and progress of students through tutorials, semester tests, preceptorials, seminars and individual assignments--making for more effective guidance and supervision by teachers and a realistic assessment of the standard attained and progress made by the students. Further, with a few exceptions, the research done at the universities follows the traditional pattern. Much of the research work in Political Science, for instance, is still of a formal kind -- it deals with constitutions, formal political and governmental institutions, structures, rules and procedures. It bears little relation to the substantive problems involved in the operation of political systems as part of society or to such basic problems as those of nation-building, political development, modernisation, and the structure of socio-economic power; nor does it utilize the interdisciplinary perspective and scientific methodology developed by political and social science scholarship in other countries.

The last, but by no means of least importance, is the problem of developing proper "professional ethics" in the teachers' community. Professor Edward Shills says that the development of sound ethics--implying a code of behaviour and standard of judgement and performance in the professions--contributes to the process of modernisation. In a country like India, where politics has led to the inflation and consequent devaluation of higher education, and where the teachers' community has not yet found its 'identity', it is of paramount importance that the teachers give attention to developing proper values, codes of functioning, and standards of criticism and appreciation and of performance. Only so can they resist the increasing politicisation and the consequent deterioration in higher education at universities. □

# *Agricultural Development*

*Shri J. Das, IAS (Retd.), Vice-Chancellor Orissa University of Agriculture and Technology, Bhubaneswar in this interview, spells out the role of agricultural universities and states what OUAT is doing for agricultural development.*

## **Role of OUAT**

**Question:** Is the general criticism that the results of excellent research works being done in the laboratories of Universities and research institutions do not get readily reflected on the farms, justified? What is the experience of your University in this regard?

**Answer:** The criticism that results of excellent research being done in the laboratories of the Universities and research institutions do not get readily reflected on farms is, in a large measure, current. This is due to the fact that the machinery to carry the results of research to the farmers is inadequate in strength and in its capacity to perform the extension tasks required. What is needed to improve the situation is greater intensity in the staffing pattern of extension workers in the concerned Departments of the Government along with a much larger measure of effort on the part of the Agricultural Universities and the Departments concerned for conduct of adaptive and field verification trials to confirm the validity or otherwise of research results under particular field conditions and to help the research and extension workers to devise the adjustments and innovations needed to adapt the research result to the needs of the situation. Research workers should also be involved in extension work to provide correct guidance to the farmers and prove the soundness of results.

**Question:** How do you figure the role of agricultural Universities in hastening the process of agricultural development in the country? What measures are needed to make the role more dynamic and purposeful?

**Answer:** The Agricultural Universities can hasten the process of agricultural development in the country by producing men who can provide the kind of service which the farmers expect and the leadership which they respect, by conducting research which can solve farmers' problems and by spearheading extension work—carrying on them research information and elements of agricultural technology which are more productive and profitable to the farmers than their traditional practices. Further extension of the new ideas and improvements in farming, successfully introduced in a few representative areas by the agricultural university, can then be effectively propagated by the departments of the Government and other agencies and organisations operating in the rural areas, such as co-operatives and rural banks.

**Question:** Recently students of Agricultural Uni-

versities were involved in the country-wide *Rabi* campaign. What was the experience of O.U.A.T. in this regard? How you feel a better rapport between the farmers and agricultural universities can be established?

**Answer:** In August last year the Post-graduate students of Orissa University of Agriculture and Technology spent a week in some of the areas of Orissa which had been hit by drought on account of the rainfall being only about 1/3-1/2 of the normal. The students helped in organising and conducting training camps of progressive farmers that could be taken to grow substitute crops where drought had hit the crops badly, or to take steps which would reduce the damage from drought. The experience of working in the campaign enabled the students and staff of the University to develop a good appreciation of the problems of farmers and of the kind of technical information they need. The response of farmers greatly enthused them in field work in the villages and has made their education more meaningful to them. The campaign included students from other Universities also and was conducted in close collaboration with the Department of Agriculture, Orissa. A better rapport between farmers and agricultural universities can be established by expansion of the programmes of extension education of farmers and spreading the needed technology among them by working in collaboration with the Departments of the Government concerned with development of agriculture and helping the farmers in adopting proper agricultural operations. At the same time short-term training camps for farmers should be organised in different parts of the State in the lean periods of agricultural operations.

**Question:** What are the highlights of achievements of Orissa University of Agriculture and Technology in the fields of research, extension and higher productivity?

**Answer:** Orissa University of Agriculture and Technology has, among other contributions of research, given to farmers of Orissa and of some other States some excellent varieties of rice. The first of those released in 1969 is "Jagannath" which has helped many a farmer to enjoy the satisfactory experience of crossing the yield barrier imposed by lodging of the rice crop when the farmer attempted to get yields of above 4 tonnes per hectare. "Jagannath", with a medium height and better standing ability and higher response to manures and fertilizers, has given to many farmers the joy of harvesting crops of 6 tonnes or even more of good quality paddy. Even during its short life it has spread in many areas in Orissa and other States. More recent contributions are "Hema" which reveals one of the highest yielding rice varieties the world has produced viz "Jaya". Compared to "Jaya", "Hema" is giving evidence of better yield stability due to better tolerance to some pests and diseases. Then there are the varieties "Rajeswari" and "Kumar", equally recent releases. Some more ex-

cellent varieties of different durations, some particularly suitable, on account of their very short durations, for the upland (beali) rice areas, are now available. These are undergoing assessment demonstrations on fields of farmers and may come to occupy large areas in due course of time. New research results, in order to spread among a sizeable proportion of farmers, usually take 6-7 years. Therefore, the speed with which "Jagannath" and "Hema" are spreading is remarkable.

Besides, the University has evolved a high yielding variety of Ragi (Finger millet) named 'Dibyasinh' which has since been released for adoption by farmers and is gaining popularity. This is an early maturing variety of 80-85 days with a yield of about 30 quintals per hectare which is almost double the yield of local variety.

Through effective extension work the University extension workers have enabled farmers in many villages in several blocks to enjoy 25 to 50 per cent increase in the yield of their autumn (beali) rice crops through sowing their crops in lines instead of using the traditional method of broadcast sowing. Line-sown crop makes weeding easier and less costly as the farmers can control the weeds by means of their local hand spade in between the lines, while the broadcast crop suffers considerable yield depression because of weeds which can not be controlled in crops grown in this manner.

The University research workers have discovered good use for the paper mill sludge waste product which had so far no earthly use. The sludge can now be used for reclaiming saline soils often noted for poor yields. After application of the sludge as per the new method developed, these soils have been found suitable for raising good crops. Impressed with the finding the Indian Council of Agricultural Research, New Delhi, has given to the University a grant of about Rs 9 lakhs to develop an Operational Research Project for an all-round agricultural development in some blocks in Puri district using the paper mill sludge to improve soil productivity.

In some of the blocks the University extension programme has resulted in many farmers intensifying their agricultural practices. They have been motivated to invest on pumping sets for lifting water from the Daya river and for irrigating large areas during *rabi* season. Therby, they have been able to raise good crops of groundnut, potato and some vegetables from sandy lands which earlier remained idle.

Besides, the University has biologically controlled the coconut caterpillar, which is a menace to coconut trees, by rearing and releasing parasites on the affected trees. Rhizobium cultures are supplied to farmers to increase the yield of leguminous crops. □

# Problems of research work in colleges—a note

M. RAMA MOORTHY

RESEARCH working and theses writing are both important for the improvement and satisfaction of intellectual desire in the teaching community. In all the Universities in India the problem is ever existing. In India there are 72 Universities 9 National Institutes of importance and 9 Institutes deemed to be Universities doing research work. Besides that there are 84 Postgraduate Centres and 40 affiliated Colleges, initiating the above object. It is generally complained by the teachers and research workers that in our Universities there are inadequate facilities for research. Our Libraries are poor. Many of the University Centres are far from business and administration. Adequate stimulation for research work is lacking in those Centres.

Every teacher by his profession itself is a researcher, whether it is humanities or sciences. He is a transformer "learning and lending to the other". Research should be a continuous process. For example in Sri Venkateswara University the affiliated teachers doing research are 12, while the regular researchers are 64.

The research facilities in the University Centres are negligible and in the affiliated Colleges still worse. The Provision must be made to satisfy the teachers who are research thursty. The present conditions are:—

1. The University is not providing adequate facilities for "Research Creation".
2. To get a guide is difficult for affiliated college teachers as the guide will be working in a post-graduate Centre or in the University.
3. It is difficult to get direct contact with the professor or guide. Full-time research students who are doing research work in the Universities are having a direct access to the guides. This is difficult for a part-time researcher.
4. The Provision of library facilities in the Universities is not commensurate with the demand for them.
5. It is a problem for the teacher in the affiliated college to choose a subject, to collect information and analyse data. This is a problem mostly faced by the Science Teachers.
6. The teacher doing research in the affiliated Colleges is not having much time for this work and the constant advice and guidance of the guide is missed.
7. They have to do their daily work in the Colleges and the leisure time they get cannot be utilised because of the frustrated conditions and absence of incentives in the Colleges.
8. The merits are not recognised and benefits are not granted to the interested research teachers in the Colleges.
9. The syllabus, the rules regarding examina-

tions and the procedure adopted are different in different Universities.

In Andhra Pradesh there are three Universities with the Postgraduate Centres and 9 Colleges are having Postgraduate courses. The formation of rules and the procedure adopted is different. In S. V. University, Tirupathi there is no Vivo Exam. but in other Universities there is Vivo test but not examination. In other Universities in India the type of the examinations is different. This creates a problem to those teachers doing research who migrate to different Universities.

There are some more difficulties of a Practical nature.

(1) The little aid given to the part-time researchers is meagre, meeting only the need for books. The expenses of travel to gather material and information has to be borne by the research worker.

(2) The rules governing registration is not uniform. To register a teacher must have 3 years of service dealing with degree classes. This restraint will lessen the possibilities for many newly appointed teachers who are fresh from the University.

(3) After spending 2 years with a guide at the University a part-time research worker must do work under the guide for 6 months for humanities and 12 months for the sciences.

(4) After research work, the teachers in affiliated colleges are not having promotions.

*There is need for the adoption of the following measures to give an impetus to the teachers to do Research*

(1) The Doctorate degree holders should be provided with the opportunities of going to the Universities and Postgraduate Centres.

(2) If there is a sanction of Postgraduates classes in major or important colleges, the availability of Guide will not be a problem.

(3) The rules governing research in all Universities must be made uniform.

(4) Financial incentives must be provided uniformly without discrimination to all the research workers whether regular or part-time.

(5) Prof. Saxena stressed that the Provisions regarding rules, conduct of examinations and incentives must be uniform and regular. Regarding conduct of examination, all Universities must follow one basic method.

The research facilities encourage the ability of the researcher and the knowledge. The teachers doing research or completing research is an asset to the affiliated Colleges. Their experience and knowledge will be available to the fellow teachers. They can initiate a fresh recruit to the teaching profession into the intricacies of doing research. Their knowledge directly benefit the Students. They elevate the academic atmosphere of the affiliated Colleges. □

# Exercise and sports physiology

Mr. R. L. Anand, Director of Netaji Subhash National Institute of Sports, in an editorial in *NIS* journal says: The recent advances of sport sciences have mainly contributed towards a remarkable development of sports training programmes. This in turn has resulted in achieving new heights in sports performances. It is the scientific training based on research and trial and error methods which has brought our sportsmen in an era of ever increasing performance. The range of activities and goal set in sports sciences have developed very rapidly in recent years at the international level. Some of the developed countries have usefully implemented the results of research studies on sports training.

The knowledge of latest research findings should be shared by all. Holding of an *International Symposium on Exercise and Sports Physiology* under the joint auspices of NIS, Defence Institute of Physiology and Allied Sciences and International Committee for Sports and Physical Education (UNESCO) was yet another endeavour of the NIS to modernise the sports-training. The Symposium which lasted for 3 days (from Oct. 28 to 30, 1974) saw many International and National personalities working on the complex physiological problems in sports. Amongst the speakers were Dr Ernst Jokl (U.S.A.), Dr P.O. Astrand (Sweden), Dr LGCE Pugh, R.H.T. Edwards and Dr J.E. Cotes (U.K.), Dr W. Hollmann & Dr Th. Hettinger (W. Germany), R. Frenkl (Hungary), Dr B. Saltin (Denmark) and Dr P. E. di Premparo (Italy).

Dr Jokl described the achievement in 400 m free-style swimming as veritable explosion of performance standards of women. He went on to say that recently established world records by Shirley Babashoff of 4 minutes 17.6 seconds surpassed by more than 1 minute the winning time in the men's competition over the same distance at the 1958 London Olympic Games. Regarding Bob Beamon's long jump record which he established in 1968 Mexico Olympics, Jokl stated that it is unlikely to be surpassed. The expansion of the athletic universe has been attributed to social changes, improvement of general living conditions and impact of scientific research. One of the most interesting effects of systematic training are described with structural adjustments to training. Training causes increase in the size of myocardial and skeletal muscle tissues accompanied with increase in number of mitochondria increase in the size of the liver proportionate in magnitude to the increase in the size of the heart and alterations in the width of the bones. However, question arises as to what is the limit of structural adjustments.

The problem of energy stores and supply in exercise is being studied by a number of scientists. Premparo emphasised that carbohydrate utilization increases with the intensity of exercise and about 25% of the total energy put at rest to about 75-80%

for work intensities close to the maximal aerobic. If the work intensity is held constant, the carbohydrate contribution to energy demand decreases progressively with time. Diet also affect carbohydrate utilization during exercise. It is lower in subjects with carbohydrate poor diet and higher in subjects with carbohydrate rich diet.

Lately, steroids have assumed greater importance in research. They are being used by athletes in most of the countries under the belief that they cause improvement in strength in a shorter period. Frenkl attributed great significance to post exercise steroidema in the development of physical fitness. This daily endogenous steroid effect may play a part in the greater stability of the internal milieu during physical exercise, as well as faster post exercise recovery. The enzyme inducing effect of muscular exercise is very closely related to steroid hormones.

Cotes was of the view that genetic and environmental factors play an important role in the physical responses to exercises. According to him, various cardio-respiratory differences which were observed between the groups were mainly due to the effect of subject's level of habitual activity, the altitude which they were studied and a genetic factor related to sex or ethnic group or the processes of genetic selection to which the subjects were exposed in the past. His results were based on studies on Gurkhas and Servicemen from India.

The popular thinking that fatigue is simply due to lack of energy has been challenged by Edwards of U.K. He found large amount of energy stored in the muscle at the end of a fatiguing isometric contraction suggesting that fatigue is not due to lack of energy.

Scores of speakers were identical in view that maximum oxygen intake is an index of cardio-respiratory fitness. Shephard stated that competitive speed was always influenced by skill, agility, motivation, strength, body build and overall reactions to group pressures. His conductance theory was developed to show the dominant role of oxygen-transport in activities lasting one to sixty minutes. He put forward his view that cardio-respiratory status of the individual must be assessed by a well standardized direct maximum test.

Strength training is important for power events like weight-lifting or sprinting. But strength only can be one integrating factor to produce performance. It is yet to prove that a co-relation exists between the kind of training and type of muscle transformation. Hettinger pointed out that required training stimuli must be well balanced for the development of muscular strength. At the time of Olympic Games at Helsinki (1952), during training, the point of complete exhaustion was avoided. The muscles were exercised with two-thirds of the maximum possible performance. Now most of the athletes endeavour to reach the point of exhaustion. □

(Continued from page 3)

where absence of employment is not so common, and the unemployed received financial support from the respective Governments, the percentage of agitating students for one reason or the other is also on the increase. The conclusion becomes irresistible that the majority of students have developed a tendency to turn to easier and softer methods of study, and the chain consequential reaction has followed in the shape of increasing discontent", Dr Chatterjee stated.

## 20 scientists get awards

Earlier, the Vice-Chancellor of Delhi University and Chairman of the Reception Committee, Dr. R.C. Mehrotra, delivered the welcome address and Professor S M. Sircar presented the overseas delegates and read the messages.

Prior to her speech, the Prime Minister presented the Indian National Science Academy Medals for 1974 to 20 young scientists.

The awards instituted by the Kothari Scientific Research Institute of Calcutta carry a medal and Rs 5,000 and are given by the Science Academy to scientists under the age of 30 for outstanding work in various branches of science.

As the 62nd Indian Science Congress wound up its organisers announced that the Delhi session had set a "new trend" for the future.

Dr. R C. Mehrotra, Vice-Chancellor of Delhi University which hosted the Science Congress, told newsmen that for the first time "a large number of younger scientists participated in the congress".

Some 4,000 scientists attended this year's session and they showed more seriousness" in discussions than in earlier sessions setting up a new trend, Dr. Mehrotra said.

The venue for 1976 congress will be Waltair and Dr. M.S. Swaminathan, Director-General of Indian Council of Agricultural Research, has been elected president for the Association for 1975-76.



*Dr H.N. Sethna, Chairman, Atomic Energy Commission, delivering the Convocation address at the Roorkee University  
(Report on Page 14)*

## Swaminathan next President of Science Congress

DR. M. S. SWAMINATHAN, Secretary, Ministry of Food & Agriculture, Director-General ICAR and an eminent plants genetist who has been elected FRS and has been awarded Magasays Award will Preside over the Science Congress at Waltair in 1976.

For the first time in the history of Science Congress, opportunity has been given to comparatively young scientists like Dr. Swaminathan and Dr. Sethna and it is a recognition of their patriotic, and relentless efforts to transform the economic map of India and to see this country a prosperous nation. Dr. Swaminathan had said that he would request all Sectional Presidents to work on one national problem during the year round and submit their results at the Waltair Congress so that a comprehensive document be prepared and the recommendations of each section on this problem i.e. the "Focal Theme" be placed before the highest policy making body of our country, as it may be at that time, so that their recommendations would help the Government in shaping its future policies in

regard to the particular problem. Dr. Swaminathan, elucidating his ideas furthers, said that he would like the problems to be raised for the Congress for which he is President as "Transformation in Rural Economy" and would wholeheartedly work on it.

Perhaps he would like to adopt certain villages as "pilot plants" for implementing the recommendations of the 1976 Science Congress. We expect that Dr. Sethna may announce "Focal Theme" for the Congress for which he has been elected President so that the nation is further more benefitted by his and his team's contribution towards bringing a revolution (a scientific one) in the country. Already the nation is indebted to the two great scientists, Dr. Swaminathan and Dr. Sethna, for the valuable and unique work that they have done in their respective fields. The Prime Minister rightly put on record the appreciation for their work in her inaugural speech and the whole nation is proud to see them at the helm of nation's affair, guiding it and carrying it out from the difficult situation as it has fallen due to certain unavoidable circumstances.

# From the Press

## Balanced Educational Development

K. Santhanam

THE importance of education is now universally recognized, but this recognition does not necessarily mean that there is balanced educational development in most countries. The problem has been dealt with in a Policy Paper prepared by the World Bank experts on the state of education in the developing countries. It has remarked, "The modern sector providing employment to a small and intensively trained elite, leads to the neglect of the 60 to 80 per cent of the population in the developing countries. Consequently, more than 50 per cent of the resources are devoted to secondary and higher education, although the student enrolment at these levels is generally less than 20 per cent of the total." Commenting on the Policy Paper, Mr Robert McNamara, the World Bank President, who is among the most enlightened internationalists, observed that though the developing countries had greatly expanded their educational system in the past few years, much of their effort had been misdirected. While a large number of persons with higher education are unemployed, many jobs do not find the right persons with the right education, training and skill. In the Policy Paper, the following four principles have been proposed for balanced educational development:

(a) There should be at least a minimum basic education for all, as fully and as soon as available resources permit.

(b) Education and training beyond the basic level should be provided selectively to improve both quantitatively and qualitatively, the knowledge and skills

necessary for the performance of economic, social and other developmental roles.

(c) A national educational system should be viewed as a comprehensive system of learning, embracing formal, non-formal and informal education, all working with the maximum possible internal and external efficiency.

(d) In the interests of both increased productivity and social equity, educational opportunities should be equalized as fully as possible.

While there should be general approval of these principles, it may be admitted that wide differences of opinion are inescapable in applying them. First of all, it is not easy to define the content of the mini-

should be of a 10-year period followed by two years of Intermediate or junior education, and three years of degree course. On account of the unnecessary changes made some years ago abolishing the Intermediate and introducing the Pre-University course of one year followed by a three-year degree course, there has been a considerable degree of confusion and reorganization in many parts of the country. Now, many universities have to reverse their steps. It is forgotten that stability in the organizational structure of education is of supreme importance and all efforts should be made to improve the quality and provide a diversity of courses rather than tinker with the duration of the courses.

Special provision for scheduled

**Under this feature, being introduced from this issue, we will be reproducing articles on various aspects of Higher Education and Research appearing in the press. This time, the two articles are from *Swarajya*, published from Madras.**

mum basic education which should be available universally and compulsorily to all. The Indian Constitution has laid down that it should be up to the age of 14. In advanced countries, education up to the age of 16 is sought to be provided for. The other questions as to the relative emphasis to be laid on languages, mathematics, sciences and the humanities like history and politics are matters of controversy.

In India, it is the fashion of every politician and public man to denounce the present educational system. The question whether before entry into the university there should be 10 or 11 years of education and afterwards whether the course up to the degree stage should be four or five years is troubling the educational world. The Central Board of Education has decided that Pre-University education

castes and backward classes and communal and caste rivalries have also played havoc with our educational system. Compulsory universal basic education should put an end to all controversies at the first stage. It may be necessary to make provision for stipends for boys and girls of the poorer sections. There is no justification for any kind of reservation or other discrimination with respect to university or professional education. When basic education becomes universal, enrolment by sheer merit will ensure an equitable number of men of all sections of the population. I am convinced that with our immense manpower resources, there is no need to divert boys and girls to polytechnics or other professional education before they have completed their higher secondary course. National integrity requires that every boy and girl should have enough work-

ing knowledge of his mother-tongue, English and Hindi in order to ensure mobility of labour and talent throughout the country. This linguistic qualification cannot be acquired if they are diverted in the middle of secondary education.

As the Policy Paper has pointed out, an undue proportion of resources is diverted in our country also for the university and higher professional education. While assistance to poor students should be provided generously, the numbers allowed to enter the university and technical colleges should be strictly limited to the actual needs and should, as far

as possible, be financed by the parents of students from the rich and middle classes. So far as the interests of the students are concerned, every person who has been allowed to enter the university or higher technical colleges should be given a job on successful completion of the course. If this obligation is equitably divided between the Central and the State Governments and the industrial and commercial undertakings, it will ensure the maximum benefit to the country from higher education and enable peaceful and progressive evolution of our social, political and economic life.

Science, History, English, Tamil, Telugu, Hindi, etc., and add to the unemployable multitude. Universities have become cockpits of politics.

Inflation has crept into our universities as well. It is not with remorse that we hear reports of post-graduates being denied even the posts of bus conductors. The number of unemployed engineers in the country is 73,000! As a result, they are becoming despondent, desperate, slavish and in extreme cases even turning Naxalites. There is no limit to which these frustrated youngsters can go — 'lilies that fester smell for worse than weeds'. When the situation is so deplorable why should we at all proliferate institutions, add to the mediocrity and reap the whirlwind?

## Crisis of Higher Education

A.G.K. Murty

CAN universities help uplift backward areas and remove regional imbalances? This question arises in the context of the Union Education Ministry's expressed ideology that grants to new universities are "special features or new programmes and activities such as uplift of backward areas or removal of regional imbalances" and should conform to other specifications like buildings, hostels, library, staff quarters, etc. The best way to ameliorate the lot of backward areas is to establish industries, promote agricultural activities by providing water resources, communications, electricity, etc. Regional imbalances in higher education can be overcome by reservation of seats.

The Saugar University was established in a backward area in 1946. When I was a student there during 1955-58, there was not even a single student studying in the university from the adjoining 20 villages. At best, the local people could get some posts of *chaprasis* and sweepers. Most of the seats were filled by students from other States. Thus, it is futile to open universities in backward areas unless otherwise it is the intention

of the authorities to accommodate students from affluent areas, spending funds that are allocated to backward areas.

Convincing Project Reports for new universities excelling in rhetoric and tyranny of words can be prepared by clever people. Such reports indulge in exemplary preambles and jugglery of figures. Instead, the University Grants Commission should cry a halt in unequivocal terms that no new universities would be opened for the next five years. The existing universities are impeded by financial shackles, threatened by unprecedented demoralization and indiscipline. Instead of accepting defeat they are viewing with one another in a spree to lowering the standards and findings retreat in slogans like "question banks", "open book system", "correspondence courses", "continuous internal evaluation", autonomous colleges, etc. No sooner are these systems introduced than their death knell is sounded. They are indulging in mere repetition and duplication of work producing post-graduates in the conventional subjects like Physics, Chemistry, Mathematics, Botany, Zoology, Public Administration, Political

The employed always raise a hue and cry for a pay rise, the educated unemployed trying to get a foot-hold and after-getting it, curse the government, the industrial labour indulging in strikes and other tactics. The quixotic attempts of the Government in casting pittance in the form of crash programmes like 'half-a-million jobs' for the educated unemployed are funny. Under the self-employment programme, auto-rickshaws, taxis and petrol bunks, dealership in cooking gas are given to the unemployed engineers at a time when all these are threatened by oil shortage. The sap is not touching the roots. This being the saddest feature of the age, some drastic remedies must be invented.

The advice of an American specialist to an African government faced with the problem of multiplication of elephants, to kill three-fourths of them, lest the species should become extinct in that country, is significant. The slogan of family planning holds good for universities also. No purpose will be served by institutions conceived in a political hurry, started prematurely and housed in still rooms. The need of the hour, therefore, is to strengthen, consolidate and cleanse the dead-alive institutions.

(Continued on page 15)

# CONVOCATIONS

## 'Job-oriented education' necessary

THE President, Mr Fakhruddin Ali Ahmed, said the country needs a "job-oriented education" and not one which gives students "degrees only."

The President, who was delivering the convocation address at Jamia Millia University in New Delhi, said the educational system prevailing in the country was evolved by the foreign Government for its own use.

But the system had become outmoded because it was neither capable of meeting our national needs" nor able to create employment opportunities" for which students, all over the country were agitating these years, he said.

Mr Ahmed said: "Our aim is not to give them degrees only. We should also be able to create in them a sense of responsibility to-

wards society and a feeling that their energies are needed by their country."

Referring to Jamia Millia University, Mr Ahmed said he did not agree with those who said that the role for which the university was established fifty-five years ago had no relevance in the changed circumstances of today.

"We have great hopes from the Jamia". Mr Ahmed said and added the people were sure the university would not only fulfil these hopes but would also help the nation in "promoting national integration and emotional harmony" with even greater determination and zeal now.

The President expressed the hope that the university which had done valuable experiments in the field of primary education and

gave the country syllabus of basic education, would once again give a lead in preparing "a new scheme" of higher education. The country is once again looking to the Jamia" he said.

Mr Ahmed said the university, whose medium of instruction had always been Urdu should make efforts to raise its standard right from the primary classes.

"I am sorry to say that the standard of Urdu has fallen in recent years", he said.

The President also called upon the university to introduce research programmes in various Islamic subjects and linguistic studies. These would be beneficial and attractive for "our own country as well as the Middle East," he said.

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He said they are often incompatible with situations where "the industrial infrastructure, transportation systems, power and communication networks have still to be built up adequately."

The only alternative lies in promoting technologies which are consistent with the country's socio-economic structure and aspirations, he said.

For instance, he said there is scope for innumerable small and intermediate industries throughout the country based on local resources and indigenous skills. "Many of these could meet almost entire needs of inputs within the particular taluka district where they are located."

An "appropriate technology" cell exists in the Ministry of Industrial Development and another has been active for some time at the Gandhian Institute of Studies in Varanasi, he said.

Bamboo reinforced buildings and low cost designs for housing being evolved at Roorkee are examples of appropriate technology, Dr. Sethna added.

Dr. Sethna said: In a labour-intensive economy such as ours

## Sethna criticises indiscriminate import of Technology

THE Atomic Energy Commission Chairman, Dr. H.R. Sethna, criticised the "indiscriminate" import of western technologies which, he said were "misfits in our socio-economic structure." Instead, India and other developing countries should evolve what he called "alternate" or "appropriate technology".

Appropriate technology is the one "capable of solving our problems with our own resources and in the context of our own social and economic aspirations," Dr. Sethna observed while delivering the convocation address at

Roorkee University which has completed its 25th year.

Western technologies are designed to slash the need for people and maximise the need for capital. They are so capital intensive that they "tend to become prerogatives of the richest countries" and "a means of economic exploitation, sometimes even blackmail," he said.

Dr. Sethna criticised "undue emphasis" on the so-called "economies of large scale operations" to justify import and even indigenous development of highly capital-intensive technologies.

it takes perhaps the equivalent of six months' salary to buy the equipment required to provide work for one man. In a capital-intensive advanced technology economy such as the United States, the equivalent figure is 350 months salary of an average American.

He said the recent escalation of oil prices, shortages of natural resources and stagnation were some of the symptoms of the relentless pursuit of exploitative technology.

When a natural resource got depleted, poorer quality reserves were progressively exploited till the cost of obtaining a unit approached its utility value.

Dr. Sethna said technological institutions in the country would have to play a vital role in fostering the growth of attitudes, skills and technologies that were appropriate to our needs.

There was greater need for developing skills of entrepreneurship and educational systems should be geared for this purpose.

## Ahmed calls for reorientation of education system

PRESIDENT Fakhruddin Ali Ahmed called for a reorientation of the education system to make the educated rural youth remain in farming and allied activities instead of moving away to urban areas for work opportunities.

In his address, read at the third annual convocation of the Tamil Nadu Agricultural University, the President said the aim should be to retain the educated youth in villages to enrich rural life."

The President said the work of an Agricultural University had to be measured by its effectiveness as an instrument of agricultural and rural development and training of the youth to shape the country's agricultural policy.

Stressing the importance of the agricultural universities organising and implementing opera-

nal research projects, on the lines of those launched by the Indian Council of Agricultural Research in suitable areas, the President said integrated area development programmes could be undertaken through their expertise.

The President added that while the major thrust of the agricultural universities was modernisation of agriculture based on science and technology, the youth should be educated "to harness science and not to be dominated by science."

The President called for greater understanding between agricultural universities and State Departments of Agriculture and Animal Husbandry so that they cooperated and worked for the common goal of serving the farmer and helping him to increase production.

## Crisis of Higher Education

(Continued from page 13)

In this context, the decision of the Government of Andhra Pradesh to open ten P.G. centres and two universities is ill-conceived. With the advent of the 'Central University' the number of universities in Hyderabad is raised to five, a costly luxury for any one city. As a measure of consolidation, for example, I suggest the amalgamation of the Central University, the Jawaharlal Nehru Technological University and the proposed university, the Central Institute of English and Foreign Languages into a Consortium. There can be three faculties, Science, Technology and Humanities. The first step of the Central University in opening M.Sc. courses at the Regional Research Laboratories and M.A. English course at the C.I.E.F.L. is one in the right direction. The idea may

be extended further and the existing potentialities may be exploited to the maximum. The prestigious laboratories and industries in Hyderabad may be elevated to the status of institutes of higher learning and associated with the 'Consortium'.

M.Sc. in Oils and Fats, Biochemistry, Pathology, Pharmacology at R.R. Labs; Dairy, Biological and Food Sciences at the National Institution of Nutrition; Pharmacy, Organic and Analytical Chemistry at the Synthetic Drugs Plant; Electronics, Computer Sciences, Nuclear Physics and Chemistry at E.C.I.L. or N.F.C.; Applied Physics and Instrumentation at H.M.T.; Applied Geology and Geophysics at N.G.R.I. and suitable courses at other industries, can be opened under the aegis of the 'Consortium'.

The C.I.E.F.L. can expand its activities by opening courses in humanities also, M.Sc. in Applied Physics, Chemistry and Mathematics may now be opened

Jawaharlal Nehru Technological University at Kakinada, Anantapur and Hyderabad as they have good laboratories, libraries and competent professors in the subjects. The research, development and training facilities of B.H.E.L., E.C.I.L., N.F.C., H.M.T., B.D.L., I.D.L. may be shared by the technology wing to mutual benefit. The excellent infrastructure available in Hyderabad provides good facilities for sandwich and implant training courses for technology students.

The craze for higher education may be contained if both the Central and the State Governments make it a policy not to give any weightage to higher qualifications in their recruitment. The right to education may be allowed up to high school classes and thereafter be made selective. Expansion of higher education must not be left to political necessity but to practical utility. Our methods and plans must be consistent with our bullock cart economy — that gets crushed under a Rolls Royce administration.



# FROM ABROAD

## PRINCIPLES FOR POLICY MAKING

A concise document has recently been made public that bids fair to stimulate wider thinking and discussion. This is *Policies for Innovation and Research and Development in Education*, a distillation by the OECD Education Committee, Paris, of its findings after a number of years of detailed work and of results more recently obtained by the Centre for Educational Research and Innovation, according to IIE Bulletin.

It starts by pointing out that educational change pursued as an objective policy is a complex process generated by many forces, and that the basic motivation for most of it has been as much social as educational. It is therefore part of a government's fulfilment of its political responsibility to orient the process of such change. How it chooses to intervene will differ between countries but the first objective must, surely, be the common one of creating an environment in which schools, universities and the like are able to innovate and to define a strategy for educational development that allows direction and priorities to be established.

## CREATING THE NECESSARY ENVIRONMENT

Here, as the Committee sees it, the policy concern is for three aspects in particular. First, participation — on which a continuing process of healthy change depends. Here there is a need to define the autonomy (as well as the authority and responsibility) of headmasters and of teachers, the mechanism and extent of student participation and the means of parental and community involvement. Secondly, modification in pedagogical arrangements to make change possible.

Thirdly, explicit definition of the limits within which the school can innovate, and the provision of enabling powers, means and supporting services.

## A STRATEGY FOR DEVELOPMENT

Given a policy for social change, a strategy for the corresponding development of education is indispensable, for in most developed countries education is the largest single organised activity in the social field. The expression of this will vary, of course, with national constitutions. Where, for instance, political authorities do not, on grounds of principle, intervene in the content of education it will declare itself in terms of inputs (e.g. allocation of resources) and outputs (e.g. examination requirements) — as in the United Kingdom.

There is need, therefore, for all countries to devise adequate means for involving the community at large in discussions about the future of their education systems.

## INSIDE THE SCHOOL

As examples of important educational changes implemented as part of broader social policies, the Committee cites the introduction of "comprehensive" systems in several countries and moves towards greater equality of educational opportunity. Here it is essential for central governments, and a number of their Ministries, to be involved. Such changes cannot be brought about by the education system on its own. When, however, it comes to innovation within the school concerning matters like curriculum, teaching methods, materials, evaluation, it is rare for central authorities to take the initiative. Nevertheless, the innovative process can scarcely make headway

without the active support of the state administrative machine.

## PLACE OF RESEARCH & DEVELOPMENT

Policies for research and development in education cannot sensibly be adopted until these same strategies for educational change have been defined by the political authority. Thereafter, the Committee concludes, public support for R and D should be pluralistic ideally going to government agencies for mission-oriented research, to the country's scientific agencies for the advancement of relevant knowledge, and to the universities. There is no case for concentrating educational R and D in a single institution, although in some countries it may be necessary to have a central body for establishing priorities and ensuring co-ordination.

## SOME BASIC NECESSITIES

Education should be viewed increasingly in its social service function; ways must be organised whereby the demand for educational change can express itself and be formulated in a truly broad social context; the school must be related to, but not dominated by, the surrounding community; changing demands must be met by an organised process of development that takes qualitative aspects fully into account; new mechanisms of participation and decision-making must be devised to include the clientele, the supplying professions and the public authorities; information to the public about educational options and issues must be improved; the evaluation of educational experiments should be fostered and no single group should have a monopoly of procedures or results; public authorities should be responsible for assisting the diffusion and transfer of innovations nationally and, when appropriate, internationally. Without such effort, the Committee finds it difficult to expect any serious take-off in the field of educational innovation.

# BOOKS

## The Educational Situation in OECD Member Countries: A Review of Trends and Priority Issues for Policy.

OECD, Paris 1974

Price \$2.25, £0.90; Pages 68

THIS report inaugurates a new activity of the OECD Education Committee — the publication every other year of a "Review of Educational Trends" that will provide an analytical picture of educational growth and the main policy problems confronting OECD member countries.

The present issue underlines the fact that education is becoming increasingly involved in a wider range of objectives than in the past; in policies for the care of very young children (particularly those who are disadvantaged); in the provision of services to the family in the context of the emancipation of women; in social equity and the redistribution of income; in the effective adjustment of young people to working life; in the flexibility of the labour force; in community action to influence the rapidly changing social and natural environment; and in the adjustment of individuals to new roles as their pattern of life changes.

It recommends that educational policies be more closely related to other policies of governments if these new social and economic objectives are to be effectively pursued. There must also be a Strategy of Development. A crucial issue for the 1970s, for example, is the proper balance in the allocation of resources as between the extension and the strengthening of the basic education systems, the continued expansion of higher education, and the development of new services.

Part One of the report covers the growth in student enrolment and teacher supply with a statistical analysis of the rapid educational expansion and the important changes in the structure

of enrolments over the 1960s. In many cases government decisions on the supply of educational services represented a response to demand pressures from parents and students. In turn, a very powerful influence behind the post-war upsurge in private demand for education has been the accelerated growth in real incomes. But the relationship here is a complex one.

Considering some of the problems in Higher Education, the report concludes among other things that greater equality of access cannot be tackled in isolation but calls for remedial measures at all levels.

The second part of the report analyses a number of factors that have influenced the rapid increase in expenditure during the 1960s and examines possible future changes in cost structure. It is also foreseen that an important pressure on resources will come from the expected rapid development of the "peripheral" forms of education such as on-the-job training, adult education and pre-primary education. Part Three is no less important. It reviews the changes that have taken place in educational structures over the last 20 years and in the quality of education, considering such matters as the evolution of national systems, curriculum relevance, changes in the teaching force, improvements in school buildings and the emergence of new structures for research, development and innovation. What emerges is the extent to which the quantitative developments described earlier in the report call for carefully thought out policies for qualitative change.

## Stable Rules: Science and Social Transmission:

OECD Paris 1974

Price \$2.50 £2; Pages 62

CERI is in the process of de-

veloping a co-operative scientific programme for the learning sciences. *Stable Rules* provides the basic document for this. It refers to five areas of research, each one concentrating on one or more aspects (human, phylogenetic, mechanical) of a general theory of learning. These are the sociology of learning, experimental ethnography, language and infancy, ethological studies, and theoretical models of learning.

This text is a first step towards a prospectus of research on non-school, non-verbatim "natural" learning. It addresses itself to the question of how children, and adults, learn from fragmentary evidence: what accounts for the stability with which language and other skills are acquired? The central idea is that the rules and strategies employed are, on the whole, negative: that the exercise of a skill is more a matter of recognising when something goes wrong and correcting it than of knowing how to make it go right in the first place.

But what must the mechanisms for learning and are skill be like; what rules obeyed? (a) They must be stable resistant to perturbations and deformations, (b) they must be mechanisms of retrieval, not of generation and are likely to be of a negative form, (c) they are sub-optimal, that is, they do not say what is "best", but only what is "good enough"—they reduce uncertainty and cut losses, (d) therefore they operate by discrete choices and are projected into a linear sequence (we can only think of one thing at a time).

A number of the new innovative areas of study discussed in this document are already being pursued by working parties set up within the Learning Sciences Programme. □

## U.A.E. President visits AMU

His HIGHNESS Sheikh Zayed Bin Sultan Al-Nahyan, President of U.A.E., was accorded tremendous ovation by the Aligarh Muslim University students on his arrival at Aligarh.

Prof. A.M. Khusro, Vice Chancellor, while welcoming him at the A.M.U. Students' Union meeting, declared amidst thunderous applause that His Highness had offered to meet all expenses needed for starting a new course in Petroleum and Chemical Engineering for which a department of College would be established in the name of His Highness.

Mr. Ahmad Khalfan Al-Suweidi, Minister of Foreign Affairs of U.A.E., speaking on behalf of His Highness Sheikh Zayed Bin Sultan Al-Nahyan, said that they were happy to see the Aligarh Muslim University which played an important part not only in the Indian sub-continent but also in the entire world. He also offered facilities of jobs in his country to the deserving students of A.M.U.

A welcome address was presented to His Highness by the President of the A.M.U. Students' Union, Mr. Ghulam Mursil Khan. The life-membership of the A.M.U. Students' Union was conferred on His Highness at the reception meeting.

Earlier, on their arrival by helicopter which landed on University Cricket grounds they were received, among others, by Nawab of Chhatari, Chancellor; Prof. A.M. Khusro, Vice-Chancellor; Prof. Mohd. Shafi, P.V.C.; District Magistrate and the S.S.P. of Aligarh.

### Bihar

THE Government of Bihar has decided to reorganize and democratise university bodies in a bid to impose strict discipline in the academic and administrative working of educational institutions in the State, according to official sources. It also contemplates to ban the political activities of teachers.

The 'code of conduct' prescribed in the draft of "the Bihar Universities Bill, 1974", which would replace the Ordinance promulgated in 1972, taking over the management of the universities, clearly and categorically says: "Every teacher shall not actively participate in any political agitation and shall not be a member of any political party." The draft Bill, likely to be enacted soon, also bans teachers' participation in organizations on "religious, caste, personal or group" lines and prohibits them from undertaking any private tuition of candidates to "gain either directly or indirectly."

Accepting the recommendations of the University Reforms Committee headed by the Vice-Chancellor of the Bihar University, Mr Zawar Hussain, the Government has created a few new posts of officers in the University and reorganized the University bodies to give due representation to teachers, students and non-teaching staff. Among the new posts created are Pro-Vice-Chancellor and Dean of Students' Welfare.

### Karnataka

Teachers and other employees in private colleges and schools, in Karnataka have been barred from indulging in political activities or participating in demonstrations against the Government. This bar has been imposed through an amendment to the Grant-in-Aid Code. Any violation of this order will automatically lead to the stoppage of the portion of the grant to institutions covering the wages of such employees.

A Government spokesman told pressmen that this prohibition was considered essential to enforce discipline in educational institutions and to maintain standards. He said that this bar already existed in respect of Government colleges and schools, as also in the colleges of the Bangalore University. What had been done now was only to extend its application to private educational institutions.

### Orissa

Teachers and staff of aided schools and colleges in Orissa will neither have the freedom of political association, nor have the unfettered freedom of expression. Such restrictions already exist in the Government-run educational institutions.

According to the modified education rules, as recommended by the all-party committee and accepted by the State Government, in *toto*, "they shall not be members of any political or communal party

and they shall not, except with the previous sanction of the managing committee or the governing body, own wholly or in part, edit or manage a newspaper, magazine or periodical publication, literary magazines or journals. School and college magazines or associations connected with teachers have, however been kept out of the purview of the rule.

## Telecom. Centre at Ghaziabad

INDIA will have an advanced level telecommunication training centre with \$1.3 million assistance from the International Telecommunication Union, a specialised agency of the United Nations.

The Centre will offer modern and advanced training facilities in telecommunications to engineers and senior technicians from India and from other countries in the ECAFE region.

To be located at Ghaziabad, about 20 kilometres from Dehli, it would meet the long-term requirements of training personnel in sophisticated techniques in terrestrial telecommunications.

The foundation stone of the centre, in which India's contribution is estimated at Rs 10 million, was to be laid on February 5 by the ITU secretary-general Mr Mohammed Mili.

## Students on Delhi Varsity bodies

DELHI University students will henceforth have a say in academic matters. Electoral colleges composed of research, post-graduate and undergraduate students will elect five representatives to the Academic Council. The student representatives will comprise one research, two post-graduate and two under-graduate students.

The first electoral college, numbering 88 students, will be composed of students registered for the Ph.D. degree during the last two years. Not more than three students from each department have secured the highest marks amongst those registered for the degree are eligible.

Three regular students each from different departments and faculties will comprise the second electoral college to elect two post-graduate representatives. This electoral college will number 175 students whose eligibility will be determined on the basis of the marks obtained by them at the

examination which entitled them for admission to the post-graduate course.

The third electoral college numbering 116 will again be composed of three students each from different departments. Comprehensive rules have been laid down to determine the eligibility of the members

of each electoral college.

The rules also provide for debarring students convicted of a criminal offence, or for an act of a criminal offence, or for an act of a coercive nature or for using unfair means in the examination, from being an electoral college member.

## World Hindi Convention

# Make Hindi Elastic

—Indira Gandhi

THE Prime Minister called upon lovers of Hindi to make all-out efforts to remove doubts about the language among the non-Hindi speaking people of the country, and urged scholars and writers to make Hindi simpler, elastic and more useful for the daily needs of the people.

Inaugurating the World Hindi Convention at Nagpur, Mrs. Gandhi said it was a mistake to think that India would have one language and one religion.

"Ours is a land of multi-languages and multi-religions and it will continue to be so in the years to come." It was because of this that the Hindi-speaking people should accept all the regional languages of the country as national languages and Hindi as the "rashtra-sampark bhasha" (link language), she added.

The Prime Minister commended the role played by trade and commerce and films in promoting Hindi and said it was not enough that the language should be a good enough medium for writing prose. A good language should be equally useful in commerce and industry, science and technology.

"We must try to make Hindi a "jeevan bhasha" (dynamic language)," Mrs. Gandhi said and referred to the Rig Veda wherein it is said that one should keep one's windows open for languages to become rich and dynamic.

She pointed out that while Hindi did not enjoy state patronage in its early period of growth, the language was firmly rooted

among the people who nurtured its growth through the ages. There was no harm now in borrowing words from English and other languages of the world to enrich Hindi.

The Prime Minister praised the Rastrabhasha Prachar Samiti for taking pains to organise the convention, and warmly welcomed the foreign delegates participating in it.

Mrs. Gandhi said while there was plenty of devotional literature in Hindi, there was a dearth of original writing in this language on scientific and technical subjects. This was a shortcoming that must be removed speedily. Translations, no matter how good, could never be a substitute for original works.

## India's first Microcomputer

WHAT is claimed to be India's first microcomputer, weighing less than 5.5. kg. whose applications cover vital areas of basic and applied research was formally launched recently.

The former Director-General of the Council for Scientific and Industrial Research, Dr. Atma Ram, launched the computer at New Delhi by pressing its key.

The computer, called Moscal 1080 PS, can calculate the weight of the tiniest mass like the atom as well as that of the earth or another planet on the basis of available data.

# Medicare in India inadequate

PROGRESS in medicare, medical education, research and preventive and social medicine in the past 28 years has been tardy and substandard. Prof. Hari Vaishnava said in his presidential address to the 38th annual conference of the Association of Physicians held at Bangalore.

Lack of sincere and persistent efforts to improve, tolerance of *status quo* and apathy — rather than paucity of funds — were responsible for inadequate medicare in the country, he said.

How are the mission hospitals (Ramakrishna and Christian missions) able to provide better care despite their limitations of money and power? he asked.

Dr. Vaishnava wanted the system of giving free medical care to all to be changed. "We shall have to rob Peter to pay Paul. Let people pay according to their capacity. Free of charge service will be to those who cannot afford."

It was a paradox that on the one hand a patient in the outdoor department of a hospital did not get more than five minutes' attention even from a junior doctor while on the other, a large number of young doctors were without proper jobs.

On medical education, Prof. Vaishnava said that despite much deliberation, the pattern of education had hardly changed. The curriculum had remained unaltered. Subjects like paediatrics did not find their rightful place at the undergraduate level. The whole teaching system was examination-oriented. A large number of teachers had not set high ethical and academic standards. Their merit was measured largely by the money they earned.

Because of substandard performance, he said, many young Indian dectors had been subjected to criticism and ridicule in many countries some of which had dere-

cognised Indian degrees, the latest country being Singapore.

Prof. Vaishnava remarked that despondency seemed to have engulfed the medical profession. Cliques, groupism and personal rivalries had further stalled progress. Private practice done without scruples and callousness in public institutions had at times lowered the prestige of the medical profession.

The Karnataka Governor, Mr. Mohan Lal Sukhadia and the Health Minister, Mr H. Siddaveerappa, suggested to the conference to discuss how the gap in medical relief between urban and rural areas could be bridged. They also wanted the conference to bestow attention on the increasing cost of medicines and the problem of spurious drugs.

## International Hindi Academy

MR. JAGJIVAN RAM Agriculture Minister, laid the foundation stone of the Vishwa Hindi Vidya-peeth (International Hindi Academy) in the campus of the Rashtrabhasha Prachar Samiti, Wardha.

The academy, first of its kind to be established, is the outcome of the four-day world Hindi convention which concluded at Nagpur. Its object is to raise Hindi from the national to the international level.

Father Camille Buckcke (a Belgian residing in India for the past 40 years and considered to be an authority on Ramayana) unveiled a statue of Sant Tulsidas on the occasion.

Speaking on the occasion, Mr. Jagjivan Ram said the academy should not merely be a centre for learning Hindi. Those who go out of this centre should acquire the composite culture of India.

Mr. Ram said he had no doubt India alone could save the world from any crisis and therefore, those who emerged from this institution should be imbued with the Indian culture.

About 400 delegates who attended the world Hindi convention at Nagpur, also attended the function.

Some of them in their speeches supported the demand for making Hindi an international language and its recognition in the United Nations.

The Hindi Academy will afford facilities to persons from different parts of the world to live and learn the Hindi language and literature in a quiet and peaceful atmosphere.

## New cricket bat by U.K. firm

A "REVOLUTIONARY" new cricket bat, used by Australian skipper Ian Chappell in the present Test series, is to be put into production by Britain's largest manufacturers of cricket bats.

Gray-Nicolls Ltd., of Robertsbridge, Sussex, who supply bats to many of the world's top cricketers, claimed that the design of the new bat would "allow balls to be hit straighter and further more often."

The bat has a scooped-out back, which has the effect of distributing the weight or "meat" of the blade over a wider area.

"In the hands of some of the world's top players, this new bat can be absolutely deadly," said the British firm's group marketing director, Mr. John Gray. "There is little doubt that club-level batting will be enormously improved. The average club batsman hits very few balls off the meat of a conventional bat. With this bat, the meaty area has been effectively doubled."

"It could be the biggest development in bat manufacture since the introduction of steel spring reinforced handles 10 years ago, and I am almost certain the new bat will turn out to be the scourge of bowlers," said Mr. Gray.

## More seats for Malaysian Students

FROM 1974-75 onwards Malaysian students will have more seats in Indian Universities.

This was stated recently by Mr Abdul Wahab, Third Secretary, Malaysian High Commission in India, while participating in the three-day convention of the All India Malaysian Students' Association, held at Madras under the auspices of the Madras branch.

One of the subjects discussed by the convention was the problem of Malaysian students returning to their country with Indian degrees. While the medical and engineering degrees of a few Indian Universities are recognised by Malaysia, the Indian arts degrees have not been faring well, and the degree holders are finding difficulties in the Malaysian job market since preference is for holders of British and Australian degrees in these subjects "The cost of education in India is nearly 50 per cent less than in Malaysia" said Mr T. Jayabalan, Chairman of the Madras branch of the Association.

Mr S. Ramachandran, State Transport Minister, who presided stressed the need for greater co-operation between the people of

## Assessment Board constituted

THE Government has constituted a high-powered board to assess educational qualifications under the chairmanship of Dr. A.R. Kidwai, chairman, Union Public Service Commission.

It will consider the recognition of degrees or diplomas awarded by Indian and foreign universities, higher educational institutions and private bodies in humanities, sciences, social science, technical and professional disciplines (except medicine) for the purpose of employment under the Central government.

Malaysia and India in the scientific and cultural fields.

Mr Mahomed Mohideen, Principal, New College, said that most of the 100 and more Malaysian students in his college, had shown a preference for the biology group. Mr K.V. Ramanathan, Regional Representative, Indian Council for Cultural Relations, and Mr Inbiraj, Chairman of the Tiruchi branch of the Association, were the other speakers.

## British expert visits India

DR. Ian James Saunders, a lecturer in physical electronics at the University of Lancaster (North-West England), is currently in India on an exchange visit jointly sponsored by the British Council Division of the British High Commission and the Indian University Grants Commission.

Dr. Saunders has been based at the National Physical Laboratory and the Indian Institute of Technology, both in New Delhi. While in Delhi he also visited the Solid State Physics Laboratory.

He is also scheduled to visit the Tata Institute of Fundamental Research in Bombay and the Department of Physics at Poona University.

Dr. Saunders' three-month visit has been arranged under the British Council's Younger Scientists Exchange Scheme for scientists between the ages of 25 and 35. The scheme involves the exchange of 15 natural scientists and five social scientists from India and Britain each year.

## Quality of human environment

ENGINEERS are tired of taking the blame for what has gone wrong with the technological world and they want to start setting matters right.

A course of remedial action has been proposed by a meeting on

environmental aspects of education and training for engineers called by Unesco in Paris in co-operation with the United Nations Environment Programme.

It drew 17 participants and consultants, mainly high-level educators and policy-makers in the engineering world from a broad geographical spectrum: the Arab Republic of Egypt, Argentina, Canada, the Federal Republic of Germany, France, India, Japan, the Netherlands, New Zealand, the Philippines, Poland, Romania, Sweden, the USSR, the United States, the United Kingdom and Zaire.

They led their conclusions with a ringing statement of principles: "Members of the engineering profession have an irrevocable responsibility to their countries and to the world at large in the safeguard and improvement of the quality of the human environment.

"This responsibility stems from the role of the engineer as the creator of new technology and as one of the main decision-makers concerning the conditions under which this technology is applied for the ultimate progress or destruction of human society.

## Information Storage Course by Unesco

A COURSE intended mainly to serve the needs of developing countries in the field of information storage and retrieval was held last year at the Centre of Technology Development, Katowice, Poland.

Organized by UNESCO in collaboration with the Polish Ministry of Science, Technology and Higher Education, the course aimed at giving some 20 educators from developing countries information and guidance so that they in turn can organize introductory courses on the principles of information retrieval.

# Seminar on inter-regional co-operation in S.E. Asia

THE International Seminar on "Inter-regional Cooperation in South and Southeast Asia", which concluded at Osmania University recently, resolved to initiate action for taking up cross country research on about 15 major themes through universities, and research institutions in South Asia. The Vice-Chancellor of Osmania University announced that Osmania University will publish the seminar's proceedings.

The seminar, first of its kind to explore Asian regional cooperation themes organised in India was jointly sponsored by Osmania University, UGC, ICSSR; UNESCO and Govt. of Andhra Pradesh. Dr. Malcolm S. Adiseshiah, Seminar Chairman, in his key-note address emphasised the need for exchange of information and experience between Asian social scientists.

Osmania's Vice-Chancellor, who inaugurated the seminar commended the collaborative approach to research on socially relevant problems for national development. Dr. M.S. Gore, Chairman, ICSSR, in his presidential address pleaded for cross fertilisation of ideas for mutual benefit of Asians. Dr. S. Manzoor Alam, Seminar Director observed the pragmatic nature of the seminar focussing on specific themes.

In his valedictory address the Seminar Chairman, Dr. Adiseshiah stressed that multi disciplinary approach should contribute to the removal of poverty and serve as an instrument of democracy. Thirty participants from about ten Asian countries deliberated for three days in two groups on "Process of Planning and Implementation"; "Urbanisation and Problems of Regional Development", "Problems of Plural Societies", and "Bureaucracy and Political Development". Prof. Sharom Ahmat of Malaysia served as Vice-Chairman.

Planning in the region, the seminar felt, was too Western-oriented and irrelevant to its needs. Bureaucracy, a colonial hangover mostly, outdated, should be reshaped to suit the changing pace of development. The participants felt that as poverty in Asia was more an urban phenomenon than rural, the question whether the world's largest continent was over-urbanised should be examined. Citing the examples of Thailand and Malaysia and their Chinese, Indian minorities, etc. the seminar stressed the role of multi-ethnic and lingual groups in national development and integration.

Among the 25 eminent social scientists who attended, eight were foreign scholars — Prof. Sharom Ahmat (Malaysia), Dr. B.L. Panditaratna (Sri Lanka), Prof. K.S. Sandhu (Singapore), Dr. Eva Duka Ventura (Philippines), Prof. Hiroshi Komai (Japan), Dr. Cirindro Pringgodingd and Mr. Suardjono Jatiman (Indonesia).

## IFCI endowment to Delhi Varsity

THE Industrial Finance Corporation of India has made an endowment of Rs. 8 lakhs to Delhi University for creating a chair in industrial management to be known as the IFCI visiting Professorship in industrial management, in the faculty of management studies. The Chair has been created for promoting advanced research and academic work in the field of industrial management.

Last month the Corporation established Professorship in management at the Institute of Management, Ahmedabad.

These Chairs will be financed out of the benevolent Reserve Fund which was established by the Corporation in 1973 out of its profits.

Prof. K.T. Hussain (Bangladesh) and Prof. K.H. Hottes (W. Germany).

The Indian participants were: Dr. Malcolm S. Adiseshiah, Dr. Satyesh Chakrabortik Prof. C.D. Deshpande, Dr. M.S. Gore, Prof. Rasheeduddin Khan, Mr. K. Kundu, Dr. Rashmi Mayur, Mr. Ramashray Roy, Dr. Balwanth Reddy, Dr. Ratna Naidu and Dr. V.K. Bawa and from Osmania Dr. S. Manzoor Alam, Prof. Gautham Mahthur, Prof. M.A. Mutahib and Prof. G. Ram Reddy.

## Man in India

### Skull indicate earlier date

THAT man existed in India much earlier than hitherto supposed has come to light with the recent discovery of a skull, believed to be 15,000 to 20,000 years old. The skull was found by Mr. V.S. Wakankar in May 1973 in a river-side cave in the Narsinghpur district of Madhya Pradesh.

Mr. Wakankar headed an archaeological survey carried out by Vikram University of Ujjain, Madhya Pradesh. He said the features of the skull clearly indicated an early homo sapiens resembling Neandertal man of the Euro-African continent.

In another finding, a settlement belonging to the Indus Valley Civilization had been excavated at Banawali Sora in the Hissar district of Haryana.

The exposed structures provide evidence of a well-planned city with a grid pattern layout of the houses, Dr. Nurul Hassan, Education Minister, recently said in the Rajya Sabha.

Typical Harappan pottery, both plain and painted, a few shreds of the pre-Harappan fabric, weights, a copper hook and a hair-pin, and terracotta bulls were also found.

## New Research Unit at Bradford

THE British Ministry of Overseas Development has granted nearly £19,000 to help the work of the new Disasters Research Unit at the University of Bradford in Northern England. The unit is part of the university's Project Planning Centre for Developing Countries. It will study the occurrence and risk of disasters, their economic effects and the scope for precautions.

The money from the Ministry of Overseas Development will be spent on the study of the economic effects of disasters, with particular reference to developing countries. It will estimate the losses suffered by different coun-

tries and regions of the world through natural disasters, and study the inhibiting effect such losses have on development.

## Student Representation on Varsity bodies

THE Bihar Education Minister, Dr. Ramraj Prasad Singh, told the Press recently that the Cabinet Sub-Committee on Education has accepted the demand of students for giving them representation on various university bodies. The University Act, he said, was being drafted accordingly. It is expected to come up in the next session of the Assembly. The Committee considered the students demands thoroughly contained in a memorandum, and conceded to some of them.

## PERSONAL

Dr. D.Y. Gohokar has taken over as Vice-Chancellor of Nagpur University w.e.f. January 17, 1975.

Shri P.G. Patil has taken over as Vice-Chancellor of the Shivaji University w.e.f. January 21, 1975

Shri P. Jaganmohan Reddi has taken over as Vice-Chancellor of Osmania University w.e.f. January 24, 1975.

Dr. (Smt) Madhuri R. Shah has been appointed Vice-Chancellor of the SNDT Women's University.

Shri D.A. Dabholkar has taken over as Vice-Chancellor, of the University of Poona.

Dr N.K. Panikker has been appointed Vice-Chancellor of Cochin University.

# INDIAN SCHOOL OF MINES

## DHANBAD-826004

Applications invited for the Entrance Examination for admission to its 5-year integrated programme of studies leading to the award of (a) B.Tech. degrees in Mining Engineering and Petroleum Engineering, and (b) M.Sc. degrees in Applied Geology and Applied Geophysics. A B.Sc. (Hons) degree in Applied Geology and a B.Sc. degree in Applied Geophysics is awarded after successful completion of three years of the 5 years programme.

The Entrance Examination will be held on 9th and 10th May 1975 at Ahmedabad, Bangalore, Bhopal, Bombay, Baroda, Calcutta, Chandigarh, Coimbatore, Cuttack, Delhi, Dhanbad, Digboi, Gauhati, Gudur, Hyderabad, Jaipur, Jodhpur, Keonjhar, Kodarma, Lucknow, Madras, Muzaffarpur, Nagpur, Patna, Raipur, Raniganj, Sahdol, Simla, Srinagar, Trivandrum, Waltair. The new session will commence on June 30, 1975.

**Qualifications:** Higher Secondary (Science stream with Chemistry, Mathematics and Physics, or in the technical stream) OR Pre-University or equivalent examination (with Physics, Chemistry, Mathematics and English) OR Indian School Certificate Examination (with Mathematics, Physics and Chemistry), OR 1st year examination of the 2-year Intermediate OR F.Sc. programme (with Physics, Chemistry, Mathematics and English). Those who have appeared in the above examinations are also eligible to apply but should submit necessary evidence of having passed the qualifying examination by June 28, 1975.

**Age Limit:** 20 years for B.Tech. in Petroleum Engineering and 21 years for other programmes as on October 1, 1975. The age limit is relaxable by three years for SC/ST candidates.

Application forms and particulars obtainable @Rs. 3/- by Crossed IPO payable to the Registrar, Indian School of Mines, at Indian School of Mines Post Office.

Last date for receipt of completed application: 22-3-75.

davp 811 (9)/74



Mr. Jagjivan Ram, Union Minister for Agriculture & Irrigation, presenting Jawaharlal Nehru Award for outstanding Post-graduate Research to Dr. B. Umanath Rao of I.V.R.I., for his significant contribution in the field of Veterinary Virology for the year 1973.

## A Bundle of Contradictions

SEEN from the eyes of a bureaucrat at random the Indian today is a bundle of contradictions than he was in the pre-independence days.

A paper presented to the Indian Science Congress sought to bring out the contrast in character of the Indian in the pre and post-independence era on the basis of a random survey. Three questions were asked to 60 government officials, selected randomly in the 24-45 age group. What the Indians were like before independence? What are they like at present? What they will be like after 25 years?

The contrast observed is : The Indian was kind then but cruel now, communal then but secular now, illiterate then but literate now, honest then but dishonest now, virtuous then but corrupt now, artistic and simple then but crude and complex now, patriotic then but traitorous now.

But the Indian today is more active, brave, strong, violent, ferocious and radical than before independence. In the next 25 years he would have more of the virtues and vices he has today.

## Hooker Award for Mathur

Mr. V.S. Mathur, wheat scientist at the Indian Agricultural Research Institute, here has been selected for this year's Hooker Award for outstanding agricultural research work.

With 17 new wheat varieties to his credit, Mr. Mathur has evolved the maximum number of high-yielding wheat varieties released by the Central varietal Release Committee. The award is particularly for his latest four high yielding varieties, namely, Arjun (HD 2009), Pratap (1981), Janak (HD 1982) and Shera (HD 1920), all released for the current rabi crop. Mr. Mathur was the breeder of the earlier varieties, Hira and Mothi, also. He had earlier won the Borlaug Award also.

## Scientists get Awards

Outstanding contributions won agricultural scientists awards at the hands of Mr. Jagjivan Ram, Union Agriculture Minister, at a ceremony in New Delhi.

The Jawaharlal Nehru Award for post-graduate agricultural research went to Dr. B. Umanath Rao for significant contribution in the field of veterinary virology. Dr. Nitya Nand Pathak (animal nutrition), Dr. S. Edision (plant pathology), Dr. Satya Parkash Yadav (plant breeding and genetics) and Dr. Vijay Singh Tomar (soil science).

There were seven recipients of the Rafi Ahmed Kidwai Memorial Prize for original contributions. They were: Dr. Abrar Mustafa Khan (nematology), Dr. B. P. Ghildyal (agricultural physics), Dr. Janardhan Venkatesh Bhat (microbiology). Dr. Sourindra Mohan Sircar (plant physiology), Dr. S.Y. Padmanabhan (plant pathology) and Dr. Syed Zahoor Qasim (fisheries). The prize was given posthumously to Dr. S.C. Sen for his contributions to sugar-cane technology.

Dr. P. B. Sarkar Endowment Prize for outstanding research leading to enhanced food production went to Dr. K.S. Nandpuri (evolution of vegetable varieties) and Dr. L.M. Jaiswal—(breeding and genetics of crop plants including cereals, oil-seeds and pulses). The prize was also awarded (posthumously), to Dr. S. Pradhan for his original findings in functional morphology.

## Ford Foundation

THE Ford Foundation, U.S.A. has placed a grant of 536,000 dollars (Rs. 40.2 lakhs) with the Tamil Nadu Agricultural University for development of Rural Social Sciences. The grant will be utilized for strengthening teaching and research in social sciences. The funds will be available for a period of three years. The grant provides for visiting Professors from India and abroad, and collaborative research between Tamil Nadu Agricultural University and other Indian Institutions.

## SCIENCE OF THE MONTH

### PHYSICAL SCIENCES.

#### Mathematics

1. Chaturvedi, K. Sharma. A study of generalized basic hypergeometric functions. University of Indore.
2. Chopra, Narinder Kumar. Theory of ballistics. University of Delhi.
3. Ramnathan, Yegnam. Dynamical weather prediction. Nagpur University.
4. Ratnavat, Hariprasad. The problems on the bingham material. University of Indore.
5. Surja Kumari. Plastic expansion of a hole in an infinite plate. I.I.T., Delhi.
6. Tembhare, Dhanpal Jaipal. Flow behind gasdynamic and magnetogas dynamic shock waves. Nagpur University.

#### Physics

1. Kushwaha, Malkhan Singh. Study of the L-absorption spectra of rare earth elements : 57 La to 63 Eu<sup>1</sup>. Vikram University.
2. Rastogi, Alok Chandra. Structural, electronic and optical behaviour of solution grown polyvinyl chloride (PVC) films. I.I.T., Delhi.
3. Saksena, Narendra Narayan. On K-absorption spectral studies of some metal chelates. University of Indore.
4. Sharma, S.K. Deformation, pairing and the effective interactions. Gujarat University.
5. Srivastava, Shyam Bihari. Study of positron annihilation in solids. Vikram University.
6. Venkata Reddy, Kudumula. An EPR study of electronic structure and symmetry of some molecular paramagnetic species in alkali halide crystals. I.I.T., Delhi.

#### Chemistry

1. Agarwal, Saroj. Mechanism of hydrolysis of organic phosphates : Hydrolysis of thymyl orthophosphates. Jiwaji University.
2. Anand, Subhash Chander. Interactions of DI-and trivalent metal cations with triphosphate. University of Delhi.
3. Awasthi, Pramod Kumar. Non-equilibrium thermodynamic studies on the transport processes in claywater system. Kanpur University.
4. Chawla, Har Mohinder Lal. Chemical components of the flowers of *Dalbergia volubilis* (C-Glycosides of isoflavones) and effect of chelation on IR carbonyl frequency of some groups of polyphenols. University of Delhi.
5. Chowdhary, Sushma. Hydrolysis of organic phosphates : Hydrolysis of tribromophenyl phosphates. Jiwaji University.
6. Kelkar, Arvind. Studies of complexes formed by quinquevalent vanadium and some organic compounds. University of Indore.
7. Patil, Prahlad Vasudeo. Structural and electrical properties of some mixed metal oxides. Nagpur University.
8. Purnanand. Mechanism of hydrolysis of organic phosphate insecticides : Hydrolysis of nitro naphthyl phosphates. Jiwaji University.
9. Satyanarayana, Kodela. Studies on organic reagents used in inorganic analysis. Ravishankar University.
10. Shanbhag, Mohan Ramanath. Studies in fatty acids. Karnatak University.
11. Sharma, Shambhudayal. Studies in kinetics of halogenation of substituted aromatic ketones. Jiwaji University.
12. Sindhu, Prithiwant Singh. Interactions of some silicate minerals with acid, base and phosphate. University of Delhi.
13. Subba Rao. Studies on the hydrolysis of hydroxamic acids. Ravishankar University.
14. Syed Kazim Immam. Effect of oral chemical contraceptive compounds on the biochemistry of the uterus and fallopian tube of rhesus monkeys, *Macaca Mulatta*. Kanpur University.
15. Tambe, Shashikant. Kinetics and mechanism of cerium (IV) perchlorate (ceric perchlorate) oxidation of some organic compounds. University of Indore.
16. Verma, K.K. Studies on some organic reactions. University of Jabalpur.

#### Earth Sciences

1. Chavadi, Veerappa Chanbasappa. Geology of the mafic and the other associated rocks of Savantavadi Area, Ratnagiri District, Maharashtra State. Karnatak University.

#### Engineering & Technology

1. Misra, Vibhuti Narain. Studies on the pre-reduction of manganese ores. Nagpur University.

### BIOLOGICAL SCIENCES

#### Biochemistry

1. Tarwadi, Shashikant Jagannath. Studies on algal bacterial symbiosis in high rate oxidation ponds using oscillatoria sp. M.S. University of Baroda.

2. Upadhyay, Chandrakant Mohanlal. Effects of dietary variations on bone composition in rats. M.S. University of Baroda.

#### Anthropology

1. Ghosh, Pradip Kumar. Morphological variability of human chromosomes in two Indian populations - Rajputs and Punjabis with special reference to Y chromosome. University of Delhi

#### Botany

1. Bajaj, Adiresh. Studies of air spora of Nagpur. Nagpur University.

2. Kate, Usha Rajeshwar. Study of Deccan intertrappean flora and microflora from India. Nagpur University.

3. Lakshmi, K. Cytological and embryological studies in families, amaryllidaceae and liliaceae. Andhra University.

4. Ramrao, K.B. Ecology and life history of hypnea. Saurashtra University.

#### Zoology

1. Chintawar, Balwant Vishwanathrao. Studies on the biology of *Indoplanobis exustus*. Marathwada University.

2. Jeevaji, Inayatullah Hatim. Development of the foetal membranes and placentation in the Indian lead-nosed bat, *Hipposideros speoris* (Schneider). Nagpur University.

3. Kaja, Janakiram. Studies on systematics and on some aspects of ecology of fresh water estuarine and terrestrial molluscs. Andhra University.

4. Kasichayanula, Veerabhadra Rao. Reproduction in the rhinolophid bat, *Rhinolophus rouxi* (Jemminck). Nagpur University.

5. Kulkarni, Prakash Prabhakar Rao. Studies on Indian homoptera with special reference to aphididae from Marathwada. Marathwada University.

6. Madre, Vasant Eknath. Studies on flagellate parasites of amphibians and reptiles. Marathwada University.

7. Mikkilineni, Jyozi Subbarao. Some aspects of physiology of prawn, *Caridina weberi*. Marathwada University.

8. Mudkhede, Laxman Matolrao. Some biological aspects of fresh water clam, *Carbicula regularis*. Marathwada University.

9. Muley, Eknath Vishnupant. Biology of the snail, *Malania scabra*. Marathwada University.

10. Peter, M. George. Studies on the pelagic polychaetes of the Indian Ocean with special reference to their taxonomy, abundance and distribution. University of Kerala.

11. Promod Kumar. Neuro-anatomy and histology of the heart of some fresh water teleosts. Jiwaji University.

12. Saidapur, Srinivas Kishanrao. Studies on the Gorads of *Rana cyanophlyctis*, *Rana tigrina* and *Bufo melanostictus* (amphibia) with reference to steroidogenic cellular sites. Karnatak University.

13. Srivastava, Shri Ram. Laboratory studies on the tape-worms and screening of antihelminthic drugs. Kanpur University.

14. Surendra Kaur Diwansingh. Biology of the gastropod, *Viviparous bengalensis*. Marathwada University.

15. Vasal, Sudhir. Experimental studies on the influence of photoperiod and temperature on the reproductive cycle of

the female catfish, *Heteropneustes fossilis* (Bloch). University of Delhi.

#### Agriculture

1. Mathur, Radha Saran. Studies on the microbiological decomposition of organic residues in soil and their biological importance. Kanpur University.

2. Pandey, Suresh Chander. Studies on fungal leaf spot diseases of sorghum. Kanpur University.

### SOCIAL SCIENCES

#### Psychology

1. Gangopadhyaya, Prasant Kumar. Social intelligence and its relationship with abstract and mechanical intelligence. M.S. University of Baroda.

2. Kanpur, Krishan Das. The personality of anti-management employees in industry. Kanpur University.

#### Economics

1. Gopala Rao, Hirithotukere Subhanna. Regulated markets and agricultural prices : A case study of regulated markets in Bombay and Karnataka. Karnataka University.

2. Parekh, Gajender Kumar. Madhya Pradesh ke suti vastra milon mein viniyojan tatha labh ka visheshan. Vikram University.

3. Rama Rao, Sakshi. Financing municipalities in Andhra Pradesh with particular reference to some selected municipalities. Andhra University.

4. Sharma, Rameshwar Dayal. Bharat ke arthik vikas mein vedeshi sahayog : Loha, ispat, rasayan, automobile udvogon ke vishesh sandarbh mein. Vikram University.

5. Sisodia, Jainarayan Singh. Regional variation in agricultural development and production in Madhya Pradesh. University of Indore.

6. Subbarao, Kalanidhi. Market structure in Indian agriculture : A study of the economic efficiency of paddy/rice marketing system in West Godavary District, Andhra Pradesh. University of Delhi.

#### Commerce

1. Baheti, Ramesh B. The cotton textile mill industry in India. University of Indore.

2. Vardani, M.S. Underwriting of capital issues in India. Jiwaji University.

#### Law

1. Mani, V.S. Procedure before international tribunal : A study in contentious and advisory proceedings. Jawaharlal Nehru University.

#### Public Administration

1. Saluja, Narinder. Role of civil services in Indian administration since independence. Ravishankar University.

2. Mittra, Rathindra Nath. Governors in Indian constitution. Ravishankar University.

#### Education

1. Naidu, Varlaxmi. Career orientation and professional preparation among the women teacher trainees of the colleges of education in Madhya Pradesh. Ravishankar University.

### HUMANITIES

#### Literature

##### English

1. Jahagirdar, Chandrashekhar Jagannathrao. The theme of alienation in J.D. Salinger, Saul Bellow and Bernard Malamud. Marathwada University.

##### Sanskrit

1. Dave, Kantilal Ramshanker. Upanishadoman upama. Sardar Patel University.

2. Jain, Inderjit. Bhartiya darshan ko Acharya Umaswati kee den. Jiwaji University.

3. Mukhopadhyay, Ananda Mohan. A comparative study in the Ekasarniya Vaisnavism and Gaudiya Vaisnavism of Bengal. Gauhati University.

4. Pandey, Nirmala. Saakhya aur Vedant ka tulnatmak adhyayan. Kanpur University.

5. Pant, Meenakshi. Smritikaleen aparadh avam dand vyavastha. Jiwaji University.

#### Hindi

1. Bansal, Rameharanlal. Makhan Lal Chaturvedi kee kavya bhasha ka adbyayan. Jiwaji University.

2. Dwivedi, Ram Shanker. Hindi aur Bangla sahitya ke saundarya bodh ka tulnatmak adhyayan : Nirala aur Ravindra ke vishesh sandarbh ke antargat. Kanpur University.

3. Kaul, Krishna. Kashmiri krishna kavya tatha pushtimargeeya Hindi Krishna kavya ka tulnatmak adhyayan. University of Delhi.

4. Mahamuni, Bhaskar Ganesh. A comparative study of trends in Hindi and Marathi short stories after independence period 1947-67. Marathwada University.

5. Mahendra, Satyavati. Paryay viparayay kosh ka adhyayan aur uska mahata. D.Litt. Jiwaji University.

6. Patnaik, Subhash Chandra. Adhunik Hindi kavya mein vyaktivadi pravriti ka vikas aur Anchal ke kavya ka anusheelan. Nagpur University.

7. Sajapukar, Usba Gangadharrao. Hindi tilikavya mein saundarya bodh. Nagpur University.

8. Sharma, Manorama. The artistic trends in the poetry of Mahadevi. Marathwada University.

9. Sharma, Narayan Vishnudatt. Hindi mein atmakatha sahitya. Marathwada University.

10. Vanshilal, Satyavati. Rashtta bhasha aur rashtralipi. Seemavayen aur samasyayen Marathwada University.

#### Urdu

1. Farooqui, Zakir Hussain. Qasid-e-Urdu Aghaz aur irtija. Nagpur University.

2. Mohammad Nazir. Niyaz Fatahpuri : Life and works. Nagpur University.

#### Marathi

1. Dolke, Ganesh Mahadeo Naundre virchit Rikmani swayamver. Nagpur University.

#### Tamil

1. Balasubramanian, V.T. Religious and literary developments of Tamil Nad during the Dark Age, 250 A.D.-600 A.D. University of Madras.

#### Telugu

1. Mrutyunjaya Rao, Jonnalagadda. Vyasa Bharatam, nannayya parishkaramu. Andhra University.

#### Gujarati

1. Maru, R.C. Kavi Sayanji Jhula and his works. Sau-rashtra University.

#### History

1. Acharya, I.N. A history of rule of Jhala Dyanasty in Saurashtra from Urpaldev Makawana to 1948. Saurashtra University.

2. Bhatt, Udai Shankar. Yasho Verma evam unka kal. University of Jabalpur.

3. Datta, Birendra Nath. Study of the folk culture of the Goalpara District, Assam. Gauhati University.

4. Kamble, Bharma Rama. Caste and philosophy in pre-Mundipt India. Marathwada University.

5. Melajah, Sneh. The Indian legislature 1909-1920. University of Delhi.

6. Sharma, H.R. Hindu vivah kee utpati. University of Jabalpur.

# CURRENT DOCUMENTATION IN EDUCATION

## List of select articles culled from periodicals received in AIU Library during January 1975

### EDUCATIONAL PHILOSOPHY

Steiner, George. "What is an educated man now?" *Times Higher Education Supplement* (156); 11 Oct 74 : 13.

### EDUCATIONAL PSYCHOLOGY

Eastgate, N.J. etc. "Motivation and study habits". *Higher Education* 3(4); Nov 74 : 379-95.

### EDUCATIONAL SOCIOLOGY

Blackburn, Kari. "Looking for constructive alternatives with countercourse". *Times Higher Education Supplement* (162); 22 Nov 74 : 6.

Eisensohn, Thomas Owen. "Institutional correlates of faculty outlooks and professional behaviours: A study of Indian Engineering Faculty". *Higher Education* 3(4); Nov 74 : 419-37.

Fox, Michael. "Place of the engineer". *Times Higher Education Supplement* (162); 22 Nov 74 : 1.

Walker, David. "Students and books: From Che Guevara to Jonathan Livingstone Seagull". *Times Higher Education Supplement* (162); 22 Nov 74 : 7.

### EDUCATIONAL PLANNING

Drever, James. "How far should manpower needs affect education planning?" *Times Higher Education Supplement* (151); 6 Sept 74 : 6.

Mahajan, G.S. "10+2+3 Pattern of education" *University News* 8(1); Jan 75 : 1, 13.

### EDUCATIONAL ADMINISTRATION

Engel, Bernard F. "So you want to be department Chairman". *Chronicle of Higher Education* 8(31); 6 May 74 : 20.

Hopkins, David S.P. "Analysis of faculty appointment, promotion, and retirement policies". *Higher Education* 3(4); Nov 74 : 397-418.

Mac Arthur, Brian etc. "Universities must expect the State to constrain their autonomy". *Times Higher Education Supplement* (151); 6 Sept 74 : 5.

Moodie, Graeme and Eustace, Rowland. "Challenges to authority". *Times Higher Education Supplement* (151); 6 Sept 74 : 13-14.

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Wilkinson, Theo. "Collective solidarity the only answer to union power". *Times Higher Education Supplement* (157); 18 Oct 74 : 9.

Wilkinson, Theo. "Facing the giant unions with hands tied." *Times Higher Education Supplement* (156); 11 Oct 74 : 9.

### CURRICULUM

"Far from being an ivory tower". *A.C.U. Bulletin of Current Documentation* (15); Oct 74 : 22-4.

Mahendra, P.L. "Work-oriented education: An approach". *University News* 12(11); Nov 74 : 4-5.

### TEACHING AND RESEARCH

Boyle, Lord. "New directions in the universities". *Times Higher Education Supplement* (151); 6 Sept 74 : 7.

Holland, Joanna. "The do-it-yourself day school". *Times Higher Education Supplement* (157); 18 Oct 74 : 8.

Kaufman, Laura. "Valuable or futile? Research goes on regardless". *Times Higher Education Supplement* (151); 6 Sept 74 : 9.

Sabnis, J.H. and Sudarkar, S.S. "Zoology: Doctoral dissertations in Maharashtra Universities". *University News* 8(1); Jan 75 : 14-15.

### EDUCATIONAL TECHNOLOGY

Cowan, John. "Succour the converted and ignore the unbelievers". *Times Higher Education Supplement* (162); 22 Nov 74 : 9.

### EVALUATION

Kaufman, Laura. "Where have all the bright students gone?" *Times Higher Education Supplement* (156); 11 Oct 74 : 8.

### ECONOMICS OF EDUCATION

Laidlow, Bruce and Layard, Richard. "Traditional versus open university teaching methods: A cost comparison." *Higher Education* 3(4); Nov 74 : 439-61.

Mauro, John. "Mac Namara's brand of budgeting fits business not education." *Times Higher Education Supplement* (156); 11 Oct 74 : 9.

Wiles, Peter. "Correlation between education and earnings: The external-test not content hypothesis". *Higher Education* 3(1); Feb 74 : 43-57.

### PROFESSIONAL EDUCATION

Dickson, David. "Growing demand among medical teachers for continuing education". *Times Higher Education Supplement* (157); 18 Oct 74 : 8.

Ridley Frederick. "Is the great British public getting the administrators it deserves?" *Times Higher Education Supplement* (151); 6 Sept 74 : 14.

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"Paper campuses get big boost". *Times Higher Education Supplement* (156); 11 Oct 74 : 10.

Venkateswara Rao, V and Sai Sastri, A.G.R. "Collegiate education in Andhra". *University News* 12(12); Dec 74 : 7-9.

### COMPARATIVE EDUCATION AND COUNTRY STUDIES

"Chinese Universities completely changed since cultural revolution". *University Affairs* 15(10); Dec 74 : 14-15.

Kaufman, Laura. "Oak tree of Leeds grows from the acorn of a college". *Times Higher Education Supplement* (159); 1 Nov 74 : 6.

Rybicki, Zygmunt. "Where selection means equalizing entrance chances". *Times Higher Education Supplement* (151); 6 Sept 74 : 6.

Umashetty, K. Setty. "Educational goals and national development". *New Frontiers in Education* 4(3); July 74 : 40-6.

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# UNIVERSITY NEWS

## Role of Students and National Progress

CHRONICLE OF HIGHER EDUCATION & RESEARCH

\* March 1975 Re. 1.25



Mr. B. D. Jatti, Vice-President of India and Chancellor, Panjab University, addressing the 27th annual convocation of Panjab University at Chandigarh on February 5.

**ON THE 25TH ANNIVERSARY OF OUR  
GREAT CONSTITUTION**

## **let us be vigilant**

**The Constitution of India represents and defines a way of life; the parliamentary democracy that we have chosen in order to fulfil our goals . . . in order to secure for ourselves justice — social, economic and political.**

**This way of life is under attack by those, among our own people, who do not like it. They would not let it prevail, much less succeed. Theirs is another way of life — disruption, destruction, denigration, fascism.**

**Let us be vigilant. That is the price of freedom and democracy.**

**PROTECT THE CONSTITUTION**

# UNIVERSITY NEWS

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

# AIU's Golden Jubilee

THE golden jubilee celebrations of the A. I. U. would be held at the Indian Institute of Technology, New Delhi, from 23rd to 25th March 1975. The University of Delhi, Jawaharlal Nehru University, the Indian Institute of Technology and the Indian Agricultural Research Institute would be jointly hosting this session. The President of India, Shri Fakhruddin Ali Ahmed, would be the chief guest at the inaugural function. As a part of these celebrations, an international seminar on "Higher Education and Development" has been arranged. Dr. Malcolm S. Adiseshiah, former Deputy Director-General, Unesco, would be giving the keynote address and Prof. Nurul Hasan, Union Minister of Education, would be presiding. Besides Vice-Chancellors and academics from Indian universities, representatives of university organisations in the Commonwealth and from the Afro-Asian countries would also be participating. Vice-Chancellors of the universities from the neighbouring countries have also been invited. The focus of discussions would be on the following topics:

- (i) Development and Under-Development
  - (ii) Recent Trends in Development Strategy
  - (iii) India in the 80's and 90's.

Prof. V.K.R.V. Rao, former Union Education Minister, would be presiding at the valedictory function when the recommendations of the seminar would be formally adopted.

An exhibition of books on higher education has been arranged. Besides member-universities, leading publishers in the country would be exhibiting their publications. The British Council, the USIS and other foreign Foundations located in Delhi would also be exhibiting their publications.

Professor Edward Shils of the Committee on Social Thought at the University of Chicago has agreed to give a public lecture. Some of the other prominent foreign participants are:

Sir Hugh W. Springer, Secretary-General, Association of Commonwealth Universities, Dr. Steven Watson, Vice-Chancellor, St. Andrews University, Prof. Sir Cyril Philips, Vice-Chancellor, University of London. Sir Roy Marshall, Secretary-General, Committee of Vice-Chancellors & Principals of U.K., Dr. Y.K. Lule, Secretary-General, Association of African Universities, Mr. I. Ogbue, Secretary, Committee of Vice-Chancellors of Nigerian Universities, Mr. E.K. Kigozi, Executive Secretary, Committee of Vice-Chancellors of East-African Universities, Mr. Abdul Baten, Secretary, Association of Universities of Bangladesh, Prof. J.J. Auchmuty, former President of Australian Vice-Chancellors' Committee, Mr. F.S. Hambly, Secretary, Australian Vice-Chancellors' Committee, Mr. L.F. Michaud, Director of Research, Association of Universities and Colleges of Canada, Prof. A.M. Chaudhuri, Vice-Chancellor, Dacca University, Prof. Abul Fazal, Vice-Chancellor, Chittagong University, Mr. A. Deleon, Unesco representative and Mr. Christian Reiser, representative of the German Academic Exchange Service.

A national seminar on Raising the Standard of University Sports would also be held in Ahmedabad on May 8 & 9, 1975. Besides Sports Officers, Directors of Physical Education, representatives of various National Sports Federations and prominent sports journalists would be participating. The Director, NIS, Patiala, Principal, Laxmibai College of Physical Education, Gwalior, and members of the faculty of physical education would also be actively associated with this conference. University teams from neighbouring countries would be invited to participate in the various inter-university tournaments to be held during the course of the year.

The Indian Council of Cultural Relations has arranged an excursion to Agra and Fatehpur Sikri for the delegates attending the AIU jubilee celebrations.

TODAY every one of us is living with problems of one kind or other. Problems are increasing and assume huge dimensions every day. Present day is characterised by alarming population growth, degradation of available energy sources, scarcity of all types of commodities, pollution of our atmosphere etc. How are we going to face these problems? We must try to solve some of the problems on urgent footing. Few problems may be tackled under a phased programme. These are all some of the backward forces shunting the progress of our nation. In this context every one of us should make efforts in this direction to solve a few problems. Our students of higher learning may be considered as supra intellectual elite of our country. They are our assets and they have a greater role to play in solving some of our problems. These students in colleges, universities and research laboratories are possessing immense potentialities. These potentialities and capabilities must be focussed and properly geared towards the progress of our country through research activities.

#### Meaning of Research

Research is a comprehensive term defined in different ways. The World Book Encyclopaedia defines the above term as, "Research is the use of systematic methods to evaluate ideas or to discover new knowledge. It usually means an organized scientific investigation. Research includes investigations to determine the temperature of distant stars, to learn if life exists on other planets or to test the effectiveness of a new drug".

Mr. Kr. Yang gives the meaning of research and benefits derived out of it as, "The meaning of research in Physical Sciences, both as an intellectual pursuit and as a means by which mankind may learn to control nature, is evident. However, the answer to why we pursue scientific research and why the public support this effort is to be found, I believe, in the final analysis that the understanding of nature clearly benefits mankind". One chief motivation for research in science may be of service to mankind.

Many sophisticated and useful products and developments have come from research. For example, underground atomic explosion, nuclear reactors, Television, Computer, jet planes, rockets, synthetic fertilizers and wonder drugs are a few outcomes which are useful for humanity. For high productivity we seek the help of research. Hence we see, feel and use the fruits and findings of research in various fields. Research and Science enables to widen our frontiers of knowledge. "Good Science is motivated by a general feeling tone of desire to advance the frontiers of human knowledge."

Acquiring new knowledge and widening it are considered as mile stones of progress. Now a days many countries have allocated a major and notable percentage of their budget for research. Importance of research is attested by the huge amount of time, manpower and sums of money spent on it by indus-

# Role of Students and National Progress

Dr. R. Pichai

and

Prof. A. R. Ramaraju

try, universities, government and the professions. "The secret of our cultural development has been research, pushing back the areas of ignorance by discovering new truths which, in turn, lead to better ways of doing things and new and better products".

#### National Progress and Research

National objectives are achieved through various means and ways. Skilled personals, technicians in different fields are produced in various universities and training institutions. These institutions have national objectives as their own objectives and gear their activities accordingly. In this context the role of science and scientific research is of paramount importance. A country cannot progress without the help of science. Role of science was once defined by our late Pandit Jawaharlal Nehru as "It is science alone that can solve the problems of hunger and poverty, of insanitation and illiteracy, of superstition and dreading customs and traditions, and of vast resources running to waste of a rich country inhabited by starving people. At every turn, we have to seek the aid of science. The future belongs to science and to those who make friends with science." Importance of science to humanity is also stressed by Dr. Albert Einstein as "Concern for man himself and his fate must always form the Chief interest of all technical endeavours.... Never forget this in the midst of your diagrams and equations".

Industries are the back bone of a country's progress. Industries which are able to exploit scientific knowledge, research and its findings are growing at a faster rate. So their role in nation's progress is important. In advanced countries fundamental research is getting more importance

because of the advances in various fields such as industries, space etc. Industry oriented fundamental research is also encouraged and are increasing fastly. With these points of view we must also plan and gear our country's progress.

In our country large amount of waste is rejected. Progressive country like ours cannot afford to reject such materials as waste. We can study the properties of these materials and find suitable refinement and modification for the re-use of the same material in a needy area. They may be used as a substitute in some other new area or field.

With ever increasing population we will be facing numerous new problems. Present research laboratories may not be sufficient to solve the mounting and ever increasing problems of future. If we solve one problem thousand and odd new problems will crop up. Hence more persons must be engaged in research for the betterment of humanity in near future.

#### **Research Oriented Course**

Students of Science at Post Graduate level at least must have orientation in research methodology and scientific method. Techniques of investigation must be introduced to them. Though the techniques of investigation may vary considerably from one Science to another, the philosophy common to all is generally referred to as scientific method.

Students of Science should have a definite knowledge about Scientific method. There are various definitions available for scientific method. "The Ideal of Science is to achieve a systematic inter-relation of facts, scientific method must be a pursuit of this ideal by experimentation, observation, logical arguments from accepted postulates and a combination of these three in varying proportion". With this basis we can introduce a piece of project work or open landed research project or oriented research etc.. to our Post-graduate students. He must be taught the basic and elementary knowledge about scientific method, research, identification of problem—Hypothesis systematic investigations, research design, collection of data, analysis, different types of research etc.

He must also be taught to write reporting of his findings in the form of a research report. The research report must be submitted in partial fulfilment of his course. After a careful evaluation, credit must be given for his original work and systematic investigation.

Madras University proposes to introduce such a scheme in the near future. It is a welcoming feature. We are on the right lines to satisfy the timely need of our country.

Creativity, self thinking, critical thinking, systematic and scientific approach in tackling a problem are some of the key techniques for the widening of the knowledge. The facilities and suitable scientific climate for the budding scientists are extremely essential.

An elementary knowledge of research may also be introduced at the graduate level in the form of simple basic and fundamental science projects or action researches. Some of the young students may develop an interest and follow the research work as his profession in his latter part of his life. Here we are able to provide a preliminary training in various research methodologies and techniques of research in the long run in his future.

The research oriented courses at University classes and Post-graduate level paves the way for producing scientists of outstanding interest, originality and authority. More scope for imagination and creativity is sown in the young minds during the college course.

#### **Present Postgraduate Courses**

The present courses are more examination oriented. They are capable of testing the memory power and cramming capacity of a student. It does not provide any scope for a student to have creative thinking and originality. His intellectual capacity is not fully excited and no new knowledge is born out of his effort. His contribution to his fellow men or to the country is not fulfilled. At present when he is undergoing a Post-graduate course there is no scope for thinking. His thinking faculty is not all touched or influenced or excited. Finally the student with a Master's degree comes out of his Alma-mater with no good attitude towards acquiring new knowledge. Hence we see that there is a greater dearth for students to pursue research as their carrier. Hence we are preventing the way for the birth of new knowledge and blocking the widening of knowledge.

Existing pit holes in our Post-graduate courses must be removed by introducing research orientation for the students. They can go out of their college only with a strong ground and training in scientific method and different research methodology. He must have a good understanding of the techniques of research. He must be in a position to appreciate the research work carried out in other branches of science. We can develop atleast a few students with skill in doing research and interest in research. These skilled researchers by research investigation contribute mite through their own original work by widening knowledge and exploring new knowledge. They in turn will be able to turn out many more researchers in their field of specialisation. Hence a continuous chain of research workers will be developed to cope up with the increasing number of problems in near future.

Thus the students in the institutions of higher education will be in search of a practical problem for their project. Every student will come out with a practical solution for a problem. The ever growing problems will be solved at their origin or birth.

If we plan this way, our industrial growth, agricultural output etc., will be stepped up. Our country's progress will be geared in a new and glorious way. □

# Classified Advertisements

## SAMBALPUR UNIVERSITY JYOTI VIHAR, BURLA

No. 7384/TDS. Dated 18-2-75.

### Advertisement

#### WANTED

NAME of the posts—One Professor each in Political Science and Physics.

Nature of the posts—Permanent.

Scale of Pay—Rs. 1100-50-1300-60-1600/-

Age of retirement—Sixty years.

#### Essential Qualifications:

(i) At least a Second class Master's degree in the subject with 48% marks.

(ii) High research qualifications preferably a Doctorate.

(iii) Capacity for conducting and guiding research work.

(iv) Teaching experience for at least ten years in a college or University with at least five years experience in teaching Postgraduate classes.

(v) For Professor of Physics: Specialisation in one or more of the following branches:—

(1) Nuclear Physics (2) Particle Physics (3) Instrumentation (4) Electronics (5) Solid State Physics

A Professor may also be appointed on contract basis for a specified period. Retired persons may also apply.

The post carries usual dearness allowance as would be sanctioned by the University from time to time.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 2/- (Rupees two) only. Candidates intending to receive forms by post are required to send (a) Crossed Postal Order of Rs. 2/- payable to the Finance Officer, Sambalpur University Burla (b) a Self-addressed envelope (23 cm x 10 cm) with postage stamps worth Rs. 2/- affixed to it with the words "APPLICATION FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money Order/Cheque will not be entertained.

The last date of receipt of applications in the office of the University at University Campus, Burla, Sambalpur (Orissa) is 20th March 1975. The candidates will be required to appear for an interview before a Selection Committee at their own expenses.

All communications should be addressed to the Registrar by designation only.

Sd/- (B. Misra)  
REGISTRAR.

## LUCKNOW UNIVERSITY

### Advertisement No. 2/1975

APPLICATIONS are invited for the following posts of Lecturers in the Faculty of Law in the grade of Rs. 700-40-1100-50-1600:

1. Eleven permanent and nine temporary Lecturers in Law.
2. One Lecturer in Law (Criminology & Penology).
3. One temporary lecturer in Law for the Post-graduate Diploma in Criminology.

#### Qualifications:

Essential: First or High Second Class Master's Degree in the subject concerned with a good academic record.

#### Preferential:

Doctorate in the subject concerned advanced studies and published work and experience of teaching degree honours/post-graduate classes for two years.

Ability to teach LL.B. classes through the medium of Hindi essential.

Benefits of Provident Fund available as admissible under the rules or confirmation for permanent post. Period of probation for permanent posts is one year. It is not necessary to fill all any of the advertised posts.

Applications on the prescribed form (available on request accompanied with a self-addressed envelope of size 23 cm x 10 cm, free of cost from the office of the Registrar) with recent testimonials, publications etc., should reach the Registrar, Lucknow University by Friday, March 28, 1975. The candidates, who are in service must send their applications through the proper channel. Application Forms to outstation candidates will be issued by post upto Friday, March 21, 1975.

## TELEVISION CENTRE INDIAN INSTITUTE OF TECHNOLOGY KANPUR IIT POST OFFICE KANPUR

### Advertisement No. 9/75

APPLICATIONS are invited for the post of one Technical Officer (Film) in the Television Centre, Indian Institute of Technology, Kanpur.

Television Centre, IIT/Kanpur is an independent but integral part of the academic programme of the Institute. For the past nine years it has operated a Closed Circuit Station within the Campus involving its students as part of their extra curricular activity. A major effort of the Centre is directed towards designing and producing educational and instructional programmes on TV

and Films from the Indian student point of view. Projects from the Indian Space Research Organization, Ministry of Information and Broadcasting, Ministry of Education are currently underway. The Centre is equipped with professional quality TV equipment, Videotape recorder and 16 mm film equipment.

Technical Officer (Film). Pay Scale Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200.

No of post: One (1).

#### Qualifications & Experience:

##### (i) Essential:

(a) A high second class B.Sc. degree in Physics, Chemistry or Mathematics from a recognized University.

(b) Diploma from Film and Television Institute of India, Poona or an equivalent Institute in (i) Cinematography, or (ii) Director, or (iii) Editing

##### (ii) Desirable:

(a) Teaching experience of science subjects for about five years at school or college level.

(b) Documentary Film making.

(c) Well conversant with 16 mm film making techniques

The Technical Officer will be involved in all the film work of educational and instructional programme, in science being produced at the Centre.

Post is reserved for candidates belonging to Scheduled Caste/Scheduled Tribes. However, if no suitable candidate belonging to SC/ST is available positions will be filled up by the other candidates.

Post is permanent and carry retirement benefits in the shape of GPF-cum-Gratuity Scheme GPF-cum-Pension-cum-Gratuity Scheme. The age of retirement is 60 years. Besides pay, post carry allowances according to Institute rules, which at present correspond to those admissible to Central Govt. employees stationed at Kanpur. Candidate called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Applications should be made on prescribed forms obtainable free of charge from the Registrar of the Institute by sending a self-addressed un-stamped envelope of 25 cm. x 10 cm. size. Names of three persons who are fully acquainted with the professional experience and character and nature of the applicant may be given so that a reference could be made. Applications accompanied by a postal order for Rs. 7.50 (Rs. 1.87 for SC/ST candidates) should reach Registrar, Indian Institute of Technology Kanpur, IIT Post Office, Kanpur - 208016 not later than 15th March 1975.

# BRAIN STRAIN

ALL OVER the world millions of people are suffering from chronic mental strain, an affliction far more menacing for civilisation than is generally realized.

Serious symptoms of such strain were first registered after World War I, when public health authorities in industrialized countries reported more and more complaints of chronic mental fatigue from people engaged in intellectual work. For several years now, specialists have noted that depression, a moderately serious psychic disorder, is constantly gaining ground.

According to the National Institute of Mental Health in the United States, about 125,000 Americans suffering from depression have to be admitted to hospital annually; 200,000 undergo treatment in out-patient clinics, and from four to eight million need psychiatric assistance. Of the 50,000 Americans who commit suicide every year, half are known to have suffered from depression. The situation is similar, although on a smaller scale, in other developed countries.

Given the present population explosion, these thousands of suicides might not seem a potential tragedy for humanity as a whole, were it not for the fact that chronic mental strain leads to a decrease in the efficiency of the intellect, and therefore in the ability to cope with problems crucial to human survival.

## A world-wide problem

### 90 PER CENT ACTIVE NOW

According to UNESCO, the total number of people engaged in research now amounts to about 90 per cent of all the talent and genius ever born. In this time of enormous advances in science and technology, we may wonder whether the brain itself is undergoing evolution. Or is the present progress only the result of the greater number of people involved in science and their greater professionalism?

Whatever the answer, there is evidence that the finest mental apparatus on earth, the human brain, has been brought to the brink of ruin. Here are some of the reasons:

- The volume of knowledge which every man has to master has greatly increased, overloading the memory;
- The tempo of everyday life has greatly intensified, adding to the burden on the brain, which seems to have a maximum capacity that should not be surpassed;
- There has been a great increase in political, moral, technical and other changes to which man has to adapt. Quite possibly there is a limit to the human organism's responsiveness and man may not be capable of sustaining an infinite number of such adaptations;
- Modern man lives in a greatly increased number of relationships with other people. Almost any problem the brain has to solve depends on the behaviour, mood, position and decisions of larger or smaller groups of people who form myriads of microcollectives. And, as any specialist in cybernetics will confirm, such inter-

Ivan Khorol

relationships make it much more difficult to obtain optimal solutions;

—The length of time taken up by education and training has greatly increased: William Pitt became Prime Minister of Great Britain at 22; today, he would have hardly left university. Nowadays, an intellectual worker spends a third of his life being educated, a process accompanied by constant mental strain. And, it should be noted, there is a tendency in many countries to begin educating children at increasingly early ages.

The list could easily be lengthened, but in any case it is clear that the brain of a man living in the 20th century has daily to store and deal with a quantity of information that a previous generation would have taken a lifetime to consume. With most intellectual workers suffering from chronic overloading, tragedy is avoided only, it seems, because the brain possesses colossal reserves that under normal circumstances would remain dormant. Louis Pasteur exemplified the use of such reserves: he continued making discoveries although one hemisphere of his brain had atrophied because of an attack of cerebral apoplexy when he was 45.

But the grave problem of mental strain, with its implications of tragic diminution of human powers, must not be neglected. It is high time to launch, possibly under the auspices of UNESCO, a world-wide campaign to save the human brain. Such a vast and complicated task would require a joint effort by specialists all over the world, seeking answers to such, perhaps controversial, questions as the following:

1. The ability of the human brain is sometimes amazingly great, including its powers of memory and the speed at which it can calculate. Mozart could write down a symphony after hearing it once. There are polyglots who know dozens of languages. Several years ago a competition in arithmetic was held in France between an electronic computer and Louis Dagbert, the "prodigy calculator"—the man—won.

Are these phenomena, of which there are many examples, an anomaly or do they reflect the norm, with the brains of most of us working at a low efficiency? If the latter is true, could we discover the secret of how the brain functions in prodigies and make it available to ordinary people?

### THE PENDULUM LAW

2. The physiological processes of man's organism are known to have a rhythm. The pattern of the rhythm is pendulum-like: if, for example, the heart-beat is too rapid, a phase with fewer than the usual number of systoles (heart contractions) will follow. This principle holds in the emotional and mental sphere which is inter-connected with physiology. And understanding of the "pendulum processes" of man's psychic activity will make it possible for every man to control his own brain.

When somebody is said to have been "at his best" or "in excellent shape" the implication is that the man's organism and psyche are in an optimal condition. But, according to the "pendulum law", emo-

tional ups and downs alternate. During periods of low activity, the brain should not be overworked or artificially stimulated.

These observations prompt a far-reaching generalization: we are witnessing the birth of a new science of brain hygiene and mental diet. Special attention should be paid to achieving a selective transmission of certain intellectual problems to the subconscious, so that some of the load is taken off the cerebral cortex and a fuller use made of the subcortex, with its great possibilities.

3. Brain hygiene should be taught in schools, so that coming generations will be able to relieve mental strain affecting them.

Due to a great number of two-way communications with his environment, an intellectual worker has to deal with several complex problems simultaneously. But the human brain, unlike some computers, is a "one thing-at-a-time" machine. Psychological and biochemical investigation shows, that when several problems have to be solved at the same time, the brain pays with mental strain and even pathological alterations in its structure.

This means that every man should learn, early in childhood, to arrange this mental effort in the most efficient way so as to avoid overloading. This can be done by rationalizing the working day, singling out the most important problems to be solved first, ignoring valueless information and learning to anticipate and master foreseen complex situations by simulating them beforehand.

4. There is an urgent need to develop diets for intellectual workers. Recent biochemical research demonstrates that mental effort requires specific chemicals. This means it is possible to act directly on the brain so as to relieve chronic nervous strain. Such strain disturbs the chemical balance of the organism; the quantity of certain harmful substances increases, while that of useful ones decreases.

The nervous system can be stimulated by certain drugs, most of which are foreign to man's organism and have negative side-effects. But some substances, such as glucose, glycamic acid, gamma-amino butric acid and gamma-hydroxy butyric acid, are natural to man. If administered in precise doses, they enable cerebral activity to be controlled and improved without side-effects.

At the moment attention is focussed on acetyl-succinic acid, present in the normally functioning brain and recently synthesized as cogitum, together with its derivatives. Cogitum intensifies the well-known phenomenon of increased oxygen consumption in brain tissues during hard mental effort and experiments have established that it has a positive effect on mental activity and resistance to strain without, it seems, deleterious side-effects.

Other, probably more potent, catalysts of human mental activity may soon be revealed. Added to the diet of those working in conditions of chronic mental fatigue, they should have a safeguard against pathological damage.

Approaches other than those indicated may prove fruitful. One thing is certain, the problem exists and should be solved quickly and comprehensively. □

# COSMIC LIFE

V. S. Venkatavaradan

Probably even prehistoric men might have wondered about the possibility of life elsewhere in the Universe. Both in Indian and Western mythologies one finds frequent allusions to people from other worlds, and recorded history shows many instances of serious thinking on the problem of extraterrestrial life by philosophers in many countries.

Before looking for evidences for extraterrestrial life, let us summarise what is known of terrestrial life. And to understand better the origin and evolution of life, one should start from the origin of the solar system itself.

The Sun, earth and other planets of the solar system presumably originated from the condensation of interstellar dust and gas due to gravitational attraction. First, what is called a protosolar cloud was formed from which the Sun and planets came into being about four and a half billion years ago.

The earth probably did not have any life for a further period of a billion years or so. Its atmosphere did not have free oxygen and could have resembled the atmosphere of present-day Jupiter. Probably due to the interaction of ultraviolet rays and charged particles from the Sun, the earth's atmosphere got enriched with organic compounds which are the precursors for life. (When the earth was young, it did not have any free oxygen—hence no ozone in its atmosphere. This resulted in a large quantity of energetic ultraviolet light from the Sun penetrating the atmosphere). Again, due to some unknown reasons these *inanimate* organic compounds combined to form the *animate* unicellular forms of life like algae. The characteristics of life, namely metabolism, growth and reproduction was achieved in some mysterious way which borders on metaphysics. By successive improvements, this primitive organism evolved into more complex forms and later into much larger systems that we see in plants, birds and animals including man.

Is the evolution of intelligent man just a chance or was it a necessity? Jacques Monod, the well-known French biologist has discussed in detail, this question in his famous book "Chance and Necessity" where he concludes that the whole affair is one of chance governed by probabilistic laws. The whole evolutionary process can be compared to a sort of "Monte Carlo game" in which the final (present) product happens to be 'intelligent' man.

Looking at it in yet another way, we may say that life on earth evolved from the basic elements—hydrogen, carbon, oxygen and nitrogen—that constituted the primitive planet. Certain favourable conditions resulted in the formation of organic compounds which gave rise to micro-organisms. (It is likely that silicon can also form long chains of compounds which are stable even at high temperatures; life based on silicon is also a possibility at some favourable sites). Further innumerable evolutionary processes gave rise to higher forms of life. At any of these intermediate stages an unfavourable condition could have terminated the chain—or make it branch off in a different direction. What

IT MAY look rather strange to link the Astronomical Sciences with the question of the origin of life. Scientists are looking for evidence of life in other planets, in meteorites and lunar samples. A landing mission to Mars has been planned which will have a biological laboratory to look for evidence of life on the surface of Mars. Scientists speculate that the poisonous atmosphere of Jupiter, containing methane and ammonia, is typical of the earth's primordial atmosphere from which life evolved.

Radio astronomers have detected tens of organic molecules in inter-stellar space from which life could evolve. And recently, the Nobel Committee of the Swedish Academy of Sciences honoured Prof. Martin Ryle and Prof. Antony Hewish with the Nobel Prize in Physics for the year 1974 in recognition of their contribution to Radio Astrophysics which could be of great importance in finding intelligent life in outer space.

can we call these favourable conditions. Are they just chances? They may perhaps be labelled *resonances*. The system, if it is in tune with its surroundings, resonates and goes to the next stage in evolution. If there is no resonance, there is no evolution. Thus the expectation of extraterrestrial life reduces to the following question : Are there environments elsewhere, either within the solar system or outside, which are capable of resonating a system ultimately to evolve some form of life? *The answer : It is not improbable; it is rather more likely than not.*

We will look into the possibility of the existence of environments in (1) the solar system and (2) other stellar systems, for life to evolve.

#### Extraterrestrial Life within the Solar System

Within the solar system, the expectations for somewhat advanced forms of life are limited by temperature conditions, availability of oxygen and liquid water. To some extent the constraints on temperature, oxygen and water are 'Homocentric' and it may be possible to have life under extreme temperature conditions without free oxygen or water. Even on earth, life exists under extreme temperature and commonly lethal conditions.

Before the exploration of the Moon by manned landings, it was speculated that it might contain some form of life in spite of the absence of an atmosphere. Precautions were taken to quarantine the astronauts so that they would not spread the harmful lunar micro-organisms.

Detailed biological analysis of lunar material has proved that there is no form of life on the Moon. However, analyses of lunar soils have revealed the presence of organic compounds in trace amounts which, in the presence of water, would form amino acids.

Glycine, alanine, glutamic acid, aspartic acid, serine and threonine were extracted from hot aqueous extracts of lunar dust. If water were to be present on the Moon, further evolution could have led to some form of life on the lunar surface. Amino acids have also been detected in a certain class of meteorites called carbonaceous chondrites, which support the hypothesis that given suitable conditions, life could evolve even in the most unlikely places,

Exploration of the planets with space crafts have given a lot of detailed information regarding the composition of the atmosphere, surface and atmospheric temperatures of planets like Mercury, Venus, Mars and Jupiter which will have a bearing on the possibility of life in these planets.

#### Mercury

Planet Mercury is essentially like the Moon, pitted with craters and without an atmosphere. Being closer to the Sun, its surface (which is facing the Sun) is very hot ( $300^{\circ}\text{C}$ ). Mercury is always pointing one of its faces to the Sun; the other side is extremely cold ( $-170^{\circ}\text{C}$  midnight). Somewhere

in the twilight region, in between, the temperature may be conducive to support some form of life due to some favourable topography. This is, of course, optimism stretched to its limit.

#### Venus

Venus has an atmosphere mostly made up of carbon dioxide—that will be an understatement if one does not mention that the atmospheric pressure on its surface is about a hundred times more than the earth's (curiously, the atmospheric pressure on Mars is about hundred times less!). Its surface is hotter than that of Mercury even though it is farther from the Sun due to the "Greenhouse effect" of its carbon dioxide atmosphere which prevents radiation escaping from the planet. Venus has a surface temperature of about  $480^{\circ}\text{C}$  where lead would be molten and mercury gaseous. Still the temperature at the top of the Venusian atmosphere is quite cold. In between, in the atmosphere, the temperature may be comfortable for some form of life.

#### Mars

Mars is a dynamic planet. One finds polar ice formation in the winter and its melting in summer. In summer, the dark equatorial regions become still darker indicating a possible biological activity. Could they be some form of vegetation whose growth is enhanced by the available water in summer? or are they just some seasonal dust storms which change the surface colour?

Courtesy : Nuclear India

## Indian School of Mines DHANBAD-826004

Entrance Examinations for admission to three-year Condensed B. Tech. degree programme in Mining Engg. 1975

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# Status of women In India

ARUNA ASAFA ALI

1975 has been declared by the United Nations to be the International Women's Year. By doing so it has posed the question clearly that the status of women in varying degrees is obviously far from one of equality with men all over the world, with the possible exception of most of the socialist countries where the whole State policy and its machinery has been geared to ensure that women truly participate in social production with their menfolk on absolutely equal terms.

The 25th Anniversary of the formation of our Republic is indeed a significant occasion to take stock of the position that the women of this country enjoy and the progress they have achieved since the days of colonial domination.

Our Constitution certainly provides for equality and the fact that there should be no discrimination on grounds of sex, religion etc. is enshrined in the Fundamental Rights. The Directive Principles of State Policy in Chapter IV of the Constitution affirms the right of full and equal franchise for all adults.

The Parliament of India has enacted various laws which give equal rights to women in marriage, divorce and inheritance. But a uniform civil code is yet to be framed, because while enlightened sections

of the public are in favour of it, the backward-looking elements in religious minorities have yet to grasp the far-reaching implication of such a law.

On mature re-election, however, we feel that even if women can sometimes attain the pinnacles of political decision-making—our Prime Minister is an eloquent example—by and large they have as yet to get out of the morass of feudal oppression, a legacy we have inherited from centuries gone by.

It is widely known that before Independence, during the days of British Rule, arrangements for the education of the masses being practically non-existent, orthodoxy and dogmatism flourished and people, particularly women, remained steeped in poverty and ignorance, shackled to traditions, customs and age-old superstitions. But the wheels of change had started revolving from the later years of the nineteenth century. And several illustrious men and women pioneered the social reform movement in many parts of our country.

## No Sex Rivalry

It must, always be born in mind that the women's movement in India was not one in which it was ever a question of man against woman, born of rivalry between the two sexes. We refused to think of ourselves as a class apart from the entire people of our country and insisted on being regarded as citizens who were equally responsible.

Besides, one must never forget that all the celebrated reformers—such as Ram Mohan Roy and others—were valiant champions of women's social liberation. They raised their voice against inhuman and oppressive social customs to which women were subjected during the degenerate feudal epoch in India. What is more I must repeat that it is well to always remember that women's right to education, to become economically independent and determine for themselves their way of life, was born at the outset in the minds of several great men-leaders who had the courage to wage war for our legitimate demand to free and equal at a time when we were not only slaves of a foreign power but also enslaved by social obscurantism at its worst. Unlike in several so-called advanced societies, the politically conscious men of India did not oppose the fundamental truth that women were not meant to be subservient creatures.

## Women on the Forefront

There is, therefore, today no profession or academic body in India where women have not entered and have not made a mark. Mrs. Ashima Chatterjee, president of the prestigious Indian Science Congress for the past year, is an eminent woman chemist. Dr. (Miss) Padmavati, the renowned Cardiologist, has just been elected to the Indian Academy of Medical Sciences. Besides such outstanding persons, we have over 20,000 qualified women doctors with graduate degrees and higher qualifications, not to mention Architects, Engineers,

Writers, Artists, Sculptors and last but by no means the least, one who directs the destinies of nearly six hundred million men and women, Mrs. Indira Gandhi, India's Prime Minister for nearly a decade.

The academic world alone has a large share of women participating in it in this country. In fact there are 23,450 women teachers in the Universities and graduate women teachers in schools account for 94,200 and there have been women Vice-Chancellors. Similarly in civic bodies eminent women have been elected as Mayors in Metropolitan cities, and at the rural level they have led panchayats as Pramukhs and many are being elected to hold ministerial positions.

In the international sphere many Indian women were chosen to head world organisations and they acquitted themselves with great ability. The UN and its affiliated agencies provide many women of distinction opportunities to render valuable help.

The administrative services in India have their share of women in increasing numbers and there are women in the armed forces including even a contingent of Parachute jumpers trained in medical relief. In Broadcasting and T.V., several women find themselves in executive positions and they are thus beginning to influence the functioning of the mechanism of the State in several spheres. In the world of the film and the stage, from the early thirties of this century women have crashed in with spectacular results, a fact that could not have been foreseen fifty years ago. The Indian film world has however, yet to produce women who can influence the direction and production of films of greater artistic merit and social significance.

Women have, of course, full and equal rights of franchise but out of 524 elected and nominated members in the Lok Sabha there are currently only 25 women and in the Rajya Sabha they account for 18 out of a total of 241 members. This proportion in the State Assemblies is maintained and should be a cause of concern for all the progressive political parties who enjoy a national stature.

Again, while there are 2.8 million men who have university degrees, there are only 700,000 odd women. Out of them, it is estimated, there are only 150,000 who are employed. But we have only been speaking of a minority as educated working women constitute around 2.5 per cent of all employed women.

Our deplorable condition becomes apparent when we consider the fact that only 18.72 per cent of Indian women are literate even though the percentage for men is not very much higher i.e. 39.45. Girls drop out at different stages while in school (i.e. when they attend it at all) in varying proportions and very much faster than boys, as they are required to help the family at home. Though the reason for this is primarily economic, it also reflects the persistence of feudal values and age-old attitudes towards women.

The percentage of working women to the total working population is approximately 19 and most of them are employed in agriculture or in unskilled

sweated jobs in towns and cities. It is precisely in this sector that their exploitation is more intense and equal pay for equal work does not exist.

### Constitutional Rights

The women's movement in India in this International Women's Year has to face these facts by striving to insist that the rights that exist in our Constitution must be implemented without further delay. We are in doing so, not seeking any favour because we have earned the right to equality.

We are capable of sharing the tasks of national development if given greater opportunities and have been involving ourselves in actions to safeguard India's independence and for world peace.

That the vast majority of our sisters have to be made conscious of their rights and responsibilities is obvious. They have to be made politically aware and the message of enlightenment has to be taken from village to village and to the poorer pockets of urban areas. In the factories and in the fields we must help them to organise themselves and exercise their inalienable right to equality. Some helpful social legislation has, of course, been enacted but no effort has been made on the part of the Government to set up an effective machinery for the implementation of these laws in practice. We, who believe that unless women are conscious partners in the cause of eliminating discrimination in all its forms and aspects, affecting every citizen, man and woman, owe it to ourselves to act in unity and light the torch of enlightenment wherever darkness prevails at present.

Educational facilities must be made available on a much wider scale, vocational and technical training centres made available for women, and a network of health centres must spread out in both urban and rural areas. The domestic drudgery involved in house keeping can be lessened if kindergartens and child care centres are organised so that women have the leisure to study and participate in the cultural life of the country. We have an enormous field to cover in the years ahead. Let us bear in mind, therefore, that nearly 220 million women in the rural areas are denied the minimum facilities of modern development and are completely unaware of the possibilities that science has opened up. This appalling state of affairs must end and 1975 should see the beginning of movement when social reformers spread out to every village in India.

1975 must be a year when the saying that the free development of each is the condition for the free development of all, both men and women, becomes a reality and not remain a mere verbal platitude, to be mouthed by slogan-mongers and self-seekers. We do not wish to look upon the question of our status in society in a superficial sense. We do not wish to be a part of the status conscious outlook, where wealth and its ownership determine a person's position in society. We are confident that a future with limitless possibilities for those who want to broaden their horizons lies ahead of us. □

# The educational dilemma in a multilingual society

Dhun D. Adenwalla

IN INDIA, although great strides have been made during the past few years in the field of education of the deaf, there remains much that has not yet been explored. In developing countries such as ours, newly committed to the service of the handicapped, institutionalised education in many fields is more often than not dependent for survival on severely limited budgets.

## Voluntary Action

Provision for the education of hearing-impaired children is mostly in the hands of voluntary organisations some of whom are aided by the State governments. There are approximately 76 schools for the deaf in India today out of which 10 are in Bombay. Training courses for teachers are conducted in Bombay, Lucknow, Calcutta and Madras.

According to the 1971 Census, the population of India was 547,950,000. Although no dependable data is available regarding the deaf in India, a few sample surveys conducted in the Second Five-Year Plan estimated the deaf population of India to be in the region of 1 million. This is an approximate figure but it does indicate the magnitude of the problem. Since 1964, the work concerning the education, training and rehabilitation of the deaf comes under the Department of Social Welfare, Government of India. However, in some States it is coordinated through the Departments of Education.

Before discussing the specific problems confronting a deaf child in a multilingual society, I would like to point out briefly the extent of linguistic diversity in the country. Our Constitution provides for 18 official languages—Hindi, English and the regional languages. In addition, 720 dialects are also spoken. Of all the regional languages, Hindi is the most widespread and is spoken in more than one State.

English in India continues to occupy a unique and paradoxical position. In urban areas, English remains the reluctant *lingua franca* of the educated middle classes. Most cities in India offer education in two or even three languages—English, Hindi and the regional language.

By the time an Indian city child is 8 years' old, he is usually on the way to being trilingual. He speaks his mother tongue fluently; he speaks Hindi as it is the language of the man in the street in most areas; he speaks English, as it may be his medium of instruction or his compulsory second language at school. In addition to these three, many children living outside their own States may well have, out of necessity, a working knowledge of that particular regional language.

Since the development of a deaf child is wholly dependent on the stimulation of his thought processes and his ability to translate these thoughts into communicable language, my main concern here is about deaf children who live in urban parts of India where the child's mother tongue is not spoken.

## Medium of Instruction

At the Oral School for Deaf Children, Calcutta, we chose English as the medium of instruction for two reasons. Firstly, although the languages used in the homes of our first twenty children were as varied as Hindi, Gujarati, Marwari, Telegu, Konkani, Bengali, Punjabi, Sindhi, Chinese, Nepali, at least one parent of every child spoke English or Hindi. Secondly the Government-sponsored school for the deaf teaches in the Bengali medium the language of our State, and we wanted to provide an alternative for the non-Bengali speaking deaf child.

We all know that the mother tongue is the best medium of instruction for all children and more so for a deaf child. However, in India the mother tongue of a child may be a dialect not officially recognised in schools for educational purposes. Or, it may be a language of a region different to the one in which the child is living. With deaf children, no matter how competent, the teaching at home in his mother tongue may be, after a certain stage his progress will be limited without the help of a school or of a trained teacher of the deaf. This, of course, often presents insuperable problems in a multilingual society such as ours. Schools teaching child's mother tongue may not be available in his area, nor a teacher of the deaf. An additional problem is the absence of books with controlled or graded language for deaf children in Indian regional languages.

On the other hand, if the medium of instruction at school is not the mother tongue, the child gets little or no reinforcement at home in the language taught in school. In our school we have tried to overcome this problem by having mothers come in compulsorily, once a week to observe lessons throughout the day and help the teacher. They come in because they get confidence in helping their child and they enjoy making aids for the children. They also help in the non-verbal activities.

## The Limiting Factor

Admittedly in these cases, the progress of language development is slow, but, it is not necessarily the

only limiting factor. A great deal depends on the child's innate intelligence, his home environment, and the attitude of the parents towards his deafness.

For instance, one of our girls aged 5, who comes from a Bengali speaking family was initially enrolled in our Bengali classes, which we started two years ago. She is oral minded and was making good progress. However, after six months, the child's mother requested us to switch the medium to English because she felt the child would have more job opportunities outside her region later if she also knew English and it would open up a wider world for her.

We expected the child to have a set back, but after a year of English studies, we found her making good progress in both oral and written language and is, in fact, ahead of her class who have already had English for two years. On the other hand, we had a boy of 9 whose family was bi-lingual with English and Nepali. Although he had been studying in English with us for three years his language development was far from satisfactory. This was partly because he received no help at home and his parents were indifferent to his handicap.

### The Choice

Another problem for us is the prescribed curriculum of studies which makes the learning of three languages compulsory up to a year before school leaving standard and which is a deterrent to those of our deaf children who do have the ability to study further. There are two school leaving examinations: the Secondary School Certificate conducted by the State Board of Secondary Education; and the Indian Certificate of Secondary Education conducted on an all-India basis by the Council for the Indian School Certificate Examinations. For both school leaving examinations, papers in two of the 15 recognised languages are compulsory. Neither of these systems make special provisions for the deaf who like hearing children, are expected to master two or three languages at the required school leaving level. Even our brightest pupils, who have acquired fairly fluent language, remain almost eight years behind the expected standard in their second language. It is obvious that if deaf people are to be encouraged to study further, they should be allowed to choose an alternative subject to the second language.

### The Terms for Integration

I would now like to talk about a problem not directly connected with multilingualism but universal deaf people who have been taught by the oral method and have rejected manual communication.

There are children not aged 14, 15 and 16, profoundly deaf, who were fortunate enough to start educational treatment at an early age, have been with us for 10 years, in fact since the inception of our school. These children are intelligent with lively, inquiring minds and have a variety of outside interests, especially in current news topics, or day-to-day political events and sports. Their school curriculum consists of language, literature, Maths, Science, History, Geography, Art, the second language. In

Maths and Science, these children are at Class 8 level, (that is two years before school leaving standards). They would take about three years to reach school leaving standard in history and geography and about 3 to 4 years in language and literature. Although their speech is imperfect, they like to talk and expect others to talk to them. They want to integrate into society on the terms set by hearing people. But they cannot follow conversation in a group and they cannot easily be understood. This in many cases leads to mutual rejection and the eventual isolation created by the handicap of deafness. They have attended a big hearing school for certain subjects, but have not benefitted educationally perhaps socially.

When these bright young oral minded children leave the sheltered community of the school, what can they expect of the hearing world? So much effort goes into preparing a deaf child for integration. But how ready is the hearing world to receive him? Until enlightened help is provided to make integrations effective, the deaf child setting out into a busy and competitive world, will be plunged into unrelied isolation.

### Interpreting Services

In most countries—even in economically developing countries such as ours—the blind can avail of reader and writer services. Would it not be possible to provide an interpreter service for oral minded deaf people? I do not mean an interpreter of the sign language. I mean an interpreter, who could be of assistance in some specific areas of a deaf person's activities, such as the college class room or lecture hall or at an interview of a social gathering. He obviously will not need this service all the time but there should be someone, with relevant professional training, whom he can call upon and who has an insight into his problems. In other words someone who can give him the help he requires on a particular occasion.

### Educating the Public

I am sure that all of you have, from time to time, come across many highly educated, enlightened people who are unaware of deafness as an intellectual and social handicap. It is not that they are uncaring or unsympathetic; it is just that they have never really thought about it. This is where, in many developed countries, mass media such as television, is playing an important role. By and large, however, we must admit that the man in the street all over the world remains ignorant of the problems and capabilities of the deaf. Until he can be educated to the fact that deaf people can also, if given the chance, develop social relationships, the loneliness that surrounds the adult deaf will persist.

In one respect, perhaps, Indian deaf children are fortunate. Most still live in joint families which gives them a measure of security and a sense of belonging. Undoubtedly, multilingualism is a problem for our deaf in India, but the more human problem of living with the hearing world remains a far greater cry. □

# From the Press

## What lacks our education

*Shri B.D. Jatti, Vice-President of India in his article in "Assam Tribune" points out as to what our education lacks today. It is reproduced below without comments.*

It is twenty-seven years since we became free and twenty-five years since we adopted a new Constitution for ourselves. We have also completed four Five-Year Plans and three Annual Plan years and the Fifth Five Year Plan has just begun. At a time like this, it is the duty of the planners and educationists to review broadly what our achievements and failures have been during the last twenty-five years or so, and to suggest the broad lines on which we should attempt educational reform in the years ahead.

We have made a number of achievements in different stages. Still perhaps our achievements are weakest in the third sector, namely, transformation of the educational system. We are all aware that the modern educational system in India was designed, about 150 years ago to meet the requirements of a foreign, colonial and imperial administration in a traditional and feudal society. Obviously, this system necessarily requires a good deal of transformation in order to make it a proper vehicle of change required by a free democratic, egalitarian and modern society which we now want to create in the country. This was clearly foreseen by Pandit Jawaharlal Nehru who, while addressing the All India Educational Conference convened by the Ministry of Education in January, 1948, observed: Whenever conferences were called to form a plan for education in

India, the tendency as a rule, was to maintain the existing system with slight modifications. This must not happen now. Great changes have taken place in the country and the educational system must also be in keeping with them. The entire basis of education must be revolutionised.

In spite of this realization it is rather unfortunate that we have not been able to emphasize the transformation of the educational system, not to carry out the major changes needed.

If broad evaluation of the major achievements and failures in the last 27 years is accepted, an outline of the educational reforms to be carried out in the years ahead becomes evident. For instance, we would have to place the greatest emphasis on the programmes of transformation. Programmes of expansion will rank lower in priority no doubt, but they cannot be neglected, especially at the stage of elementary education or and in respect of adult literacy.

On this basis, I might briefly indicate the broad outline of the major programmes of educational reform to be attempted during the next ten years.

At present, we spend a very large amount every year on education: Our total educational expenditure is about Rs 1,350 crores a year and ranks only next to that on defence. In spite of this, the benefits of the system go not to the poor masses but to the comparatively well-to-do classes. This is clear from the fact that 65 per cent of the total population is still illiterate, only 25 per cent of the children in the age group 6-14 complete primary and middle school education and that only 7 per cent of the young persons in the age-group 15-25 study in secondary schools and colleges. It is therefore, absolutely necessary to shift the emphasis on to the education of the masses.

We depend at present almost exclusively on the formal system of education. Such a system provides education only to children and new workers, and, therefore, is less effective than a non-formal system which provides education, on a part-time or self-study basis, to workers and adults. The formal system is further heavily biased in favour of the well-to-do classes, and the poor people either do not enter it or soon drop out of it. The system is also very costly and wasteful. The most urgent reform needed, therefore, is to create a new educational system which will have both formal and non-formal elements blended together in all appropriate fashion. There should be large provision for lateral multiple-entry. A provision for part-time education and self-study must be made liberally at all stages. In addition to the full-time professional teachers, we must also be able to utilise all the educational resources available in the community,

We ought to have provided universal education for all children in the age-group 4-14 by 1960. In spite of the tremendous expansion achieved, we have not been able to reach this goal. We must, therefore, prepare a revised programme and see that elementary education is made universal in all parts of the country during the next ten years. For this purpose, we will have to provide special schools which teach elementary courses in a condensed manner, to grown-up children who may join schools later, say, some time between the ages of 11 and 14. Steps will also have to be taken to enrol girls and children from the weaker sections like Scheduled Castes, Scheduled Tribes and landless agricultural labourers.

A large programme of adult education will have to be developed. One of its special objectives should be to liquidate illiteracy. It should strive to create self-awareness among the people and

involve them in developmental programmes through education in citizenship, family planning and upgrading of vocational skills.

Secondary education is now the weakest link in the chain: it fits a student for entrance to universities and almost unfit him for everything else. We must vocationalise the higher secondary stage so that a large majority of students are diverted into different walks of life

Programmes of qualitative improvement should also be taken up and emphasized at every stage. The most important of these is to include work experience as an integral part of education so that the children and youth learn the dignity of labour. A good deal of the time of students at all stages should be used in service to the local community or in programmes of national development. Education should really achieve three things: imparting of information, teaching of skills and cultivation of values. At present we concentrate mostly on imparting information. While this should continue, we must pay much greater attention to the teaching of skills and especially to the inculcation of moral and social values.

In both secondary and higher education, the highest emphasis should be on improvement of quality and the role of expansion will have to be slowed down. This should not, however mean decrease of educational opportunities to the weaker sections of the community, especially the Scheduled Castes and the Scheduled Tribes. In fact, the opportunities open to them should be increased through liberal assistance in every way.

A big programme of educational reform on these lines cannot be implemented by Government alone although Government will have to make intensive and sustained efforts for the purpose and provide the bulk of the financial resources needed. In fact, it needs the cooperation of all concerned—the general public, the teachers the students and the educational administrators. It is the responsibility of the public to give more support to all these programmes and to do their best to educate their own children on these lines.

It is the responsibility of teachers to ensure that the highest standards are maintained in educational institutions, to indentify themselves fully with the welfare of the students committed to their charge and to maintain an atmosphere of sustained hard work all the year round. The student should devote all their energies to the proper pursuit of their studies. They strive also to cultivate the basic values of democracy, socialism and secularism and to be vigilant against all deviations from the highest moral standards. In fact, it is for the students to organise committees and to launch a movement to ensure that no unfair practices are adopted in examinations and to eschew violence which has no place in democratic life. The educational administrators have also a great responsibility for promoting the development of all these programmes in expansion, qualitative improvement and transformation. It is only an all-round national effort of this type that can help us to make our educational system a powerful instrument of social change and national development.

Finally, I should like to repeat here that what I have always said; that in our country education should have a spiritual orientation which is something broader and deeper than mere intellectual knowledge. Despite historical vicissitudes, spirituality has always marked our way of life. It should be the mission of our educators to preserve and transmit to succeeding generations those fundamental values which have inspired and vitalised our culture through the ages. These are values which can bring compassion and charity and the spirit of service into the lives of our people and in their relations with others. If social justice and equality is not yet fully absorbed the ideals of true Bharatiya Vidya with its emphasis on unity tolerance, discipline and brotherhood. Both education and religion are essential for progress. Education can cleanse religion and make it a nourishment for the soul, while religion can enable education and lend a higher significance to it. This is consummation for which the teachers and students should continually strive.

□

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# CONVOCATIONS

## Universities must be service-oriented

WHILE delivering the convocation address at the Nagpur University Dr. G.S. Mahajani, former Vice-Chancellor of University of Poona said, we are roughly a hundred Universities strong in India; and, at the outset, the question might be asked whether, in a developing society as distinct from a 'successful' developed society, the role of a University is in any way different. In the abstract, strict sense of the term, development is a continuous process. It should never stop, as if completed. The term 'developing' is, therefore, to be understood in a relative sense. Nations in Asia (barring Japan) Africa, and Latin America are generally referred to as developing nations. Is the role of universities in these countries different from that of the universities in the U.K., and U.S.A., and the U.S.S.R.? And if so, in what way?

My ready answer will be that this role relates not so much to the character of the society as to the tasks that confront it.

Universities are certainly the intellectual powerhouses of the world. But, they must also be service-oriented institutions. Service can take many forms, e.g. spread of literacy, identifying the needs and problems of the society and endeavouring to meet those needs and solve those problems. In this latter capacity of rendering service to the society, close collaboration with the State is found essential.

Co-operation with the State

naturally leads us to the perennial problem of university autonomy. Here too there are two (somewhat contrary) assumptions. The first assumption, to quote Sir Walter Moberly, is:

"On any showing, universities are powerful, influential corporations and they perform functions of high public importance, so that in no country can the Supreme political authority be completely disinterested in the affairs of the universities. It does, and it must, exercise some measure of supervision over them. Nowhere is university autonomy absolute or unconditional". The second assumption is "that a high degree of autonomy is absolutely necessary, if the functions of universities are to be properly performed."

In a developing country (I have primarily the case of India in mind), the position in education today can be briefly stated as under:

Universities cannot function in isolation. They have become partners of the State. For, the State while mainly concerned with the spread of basic, primary education, has yet to shoulder considerable burden in respect of higher education and research: the universities, on their part, while mainly responsible for higher education and research, have also accepted the additional duty of "securing that a large and increasing number of classes and

groups outside their campuses profit from their researches."

Adult education, as also what is called "continuing education", has thus been accepted as their necessary function by universities.

There is yet another aspect of the question which brings into focus special responsibilities of universities in a developing society.

In developed countries, the three basic, social processes have gone together—industrialization, education, and extension of franchise. Industrialization created the need for literacy and made it essential to provide at least elementary education on a mass scale. Literacy permitted the extension of franchise and its culmination in effective democracy. But, in India (and several developing countries), the historical process has been different. Instead of the three basic processes going alongside each other, politics (at the time when the Constitution was adopted) took a jump ahead of the other two. While yet the country's economy was agrarian, and education was far from universal, we adopted universal suffrage. Maybe, historical compulsions left no alternative. But they produced important consequences for universities. A largely rural and uneducated electorate secured a crucial voice in developing education and industry. Now, education, however elementary and incomplete, confers tangible economic advantage and social prestige. This leads to greater pressure in favour of expending available resources to cover more and more of the population than towards the raising of standards. The rate of expansion outstrips the capacity of the society to handle it. Thus, in a developing society, universities have to take speci-

cic measures to maintain standards.

Addressing the graduates of the year, he said, you are living in times when unemployment and shortages of all kinds have assumed a global importance. To make things difficult, as Alvin Toffler has pointed out, the explosion of technology and the pace of its on-coming flood bring what he calls the 'future shock', disturbing the smoothness of civic life. Well, the function of

religion is to sustain society and its civic life. But we must now use a different language. Prophets, philosophers and thinkers have all spoken about some indicators of right conduct. Call them moral values or civic virtues—they are valid and unassailable in any civilization. These five indicators are truth, non-violence, compassion, purity, and spirit of self-sacrifice. These are and will ever be your shock-absorbers.

much as at production by the masses. It should not aim at gigantism but believe that the 'small is beautiful'. Instead of creating monstrous cities surrounded by impoverished rural areas we should think of developing largely self-sufficient agro-industrial communities which are inter-linked with each other through mutual services and support; and, instead of subordinating everything to the blind pursuit of science and technology, we should let the moral order prevail over everything else and create, what Acharya Vinobaji has described, as the 'age of science and spirituality'.

Talking about the role of educated, he said, the role of educated classes, particularly of those who have received university education by and large, in the past has been that this group of highly educated persons joins this social structure and becomes an exploiting rather than a service group. This trend has to be counteracted. The society invests large sums of money in the education of these persons. It is, therefore, their duty and moral obligation to return this debt through dedicating themselves to the service of the *Daridra Narayana*. One of the major objectives of higher education must, therefore, be to inculcate the spirit of service among the students so that they identify themselves with the masses, and ceaselessly strive to improve their standards of living and to create an egalitarian society. It is from this point of view that programmes of Compulsory National Service for university and college students assume great significance.

to make elementary education universal.

In a situation of this type, where the overall picture is a mixture of light and shade in almost every important sector of life, it appears to be a matter of taste whether one should be an optimist or a pessimist. I would not, however, like to join the band of pessimists who ignore or belittle our achievements, exaggerate our short-comings and failures and forecast doom. Even at the risk of being dubbed as old-fashioned, I am, and shall continue to be, a staunch optimist. This does not mean that I am taking a complacent attitude or under-estimating our short-comings or failures. It only means that I have an unshakable faith in my people and in the future of my country.

It was Mahatma Gandhi who, for the first time, challenged the wisdom of adopting the model of a Western industrialised society. He was of the view that we should, instead, create our own model of a society suited to our own needs and conditions. This should be based, not on endless and insatiable consumerism, but on our traditional values of self-restraint and plain living and high thinking. It should not attempt at mass production so

MR. B. D. JATTI, Vice-President of India, while delivering the 27th annual convocation Address of Panjab University said : It is an academic tradition that the Annual Convocation should be utilised to give advice to the young graduates of the year who would be entering their working life and for discussing major current issues in education or society. However, I propose to depart from this tradition as I am not at all certain that mere advice from a platform will serve any useful purpose.

Commenting on education in the country, he said, we have made tremendous advance in the development of science, scientific research and agricultural, engineering and medical education so that, from the point of view of highly trained scientific manpower, we now hold the third place in the world. There has also been a tremendous expansion of general education at all stages and there have been note-worthy achievements in spreading education among girls and among the Scheduled Castes and Scheduled Tribes. On the debit side, it has to be admitted that we have not been able to transform the educational system to suit national needs and aspirations, to improve standards adequately, to liquidate illiteracy or

# *Round Up*

## **United Nations University inaugurated**

THE Prime Minister of Japan, Mr. Miki Takeo, officially inaugurated the founding of the United Nations University when he addressed the fourth session of the university Council in Tokyo on 20th January. This was the first session of the Council since the opening of the University's temporary headquarters on December 2, 1974.

The Council session (20 to 24 January 1975) was also attended by the Rector-Designate (head) of the University, Dr. James M. Hester, who is currently President of New York University. Dr. Hester presented to the Council a series of recommendations to implement the University's mandate.

The 24-member University Council was appointed jointly by the United Nations Secretary General, and the Director General of the United Nations Educational, Scientific and Cultural Organization (UNESCO). The Secretary-General, the Director General of UNESCO, the Executive Director of the United Nations Institute for Training and Research (UNITAR), and the Rector are ex-officio members of the Council.

Mr. C. V. Narasimhan, United Nations Under-Secretary-General for Inter-Agency Affairs, represented the Secretary-General at the University's inauguration and at the fourth session of the Council.

### **Guiding Principles**

The Rector noted in his recommendations to the Council

that "the University must establish processes that will protect it against undertaking insignificant or ineffective activities, or making inconsequential affiliations", because the world's leading scholars, scientists and thinkers "will not spend time with an organization that does not insist on high standards in all that it does".

Dr. Hester noted that, "to allow the University to become a loose confederation of institutes without clearly identifiable institutional priorities, programmes and standards would defeat the purpose of establishing the University. The University needs to establish reasons for its affiliations and standards that affiliates must observe."

The Rector noted the importance of using the University for the benefit of institution and scholars in developing countries. The University is an "anti-brain-drain" agency designed to help rather than hinder the growth of useful research capabilities in developing areas of the world, he writes. "Funds designated by the University Council for institutional support or for aid to scholars should be used in large measure to assist institutions and scholars in developing countries."

He proposed a set of principles to guide the University at least during its initial stages of development:

Achieve broad worldwide impact through information gathering and dissemination, in-

cluding conferences and publications.

Maintain judicious balance between utmost academic excellence and needs for regional development and participation.

Avoid unnecessary duplication and resist any tendencies toward competition and rivalry with other institutions, and

Prefer to be criticized for taking pains rather than undertaking mediocre, redundant or purely political activities, which will damage the prestige and therefore the potential of the University of effective work.

### **Programmes**

The Rector proposed that programmes be selected for implementation on the basis of the following three primary criteria:

That a pressing world need exists for the programme;

That a significant contribution toward world betterment can be made through the programme, but

That the programme is feasible on a practical and a manageable scale.

Other criteria to be taken into account in selecting a programme are:

The regional benefits that may accrue through the programme, such as local training, local collection of data, local establishment facilities, etc.;

The development aspects that may accompany a regional assignment of the programme, particularly in strengthening research capabilities within a society that wishes to improve its academic foundations; and

The useful institutional presence that University may realize through the programme, either by extension or affiliation.

### **Programme Priority**

Dr. Hester identified six "most often-mentioned areas of global concern" for consideration by the Council when it discussed programme priority. These are:

- (a) Management of Natural Resources,
- (b) Environmental Engineering,
- (c) World Hunger
- (d) International Relations,
- (e) Development and
- (f) Human Rights.

## Affiliate and Associate Status

Dr. Hester differentiated between affiliate and associate status with the United Nations University. Affiliation carries with it "a degree of University, participation in setting the policies and standards of an institution. An associated institution would be independent of University participation in such matters, but would, through its associate status, reflect a close relationship with the University, a desire to participate actively in its consultative and information activities, and a willingness to help the University evolve into major worldwide influence that is contemplated."

The device of associate status, writes the Rector, helps to get such links established long before the University could afford the eventual extensive network of affiliated institutes and training programmes that is contemplated. "Granting associate status might also serve as a way to respond affirmatively to proposals for affiliation which are not practical or do not meet the criteria or standards for affiliation."

Dr. Hester hopes that the University will be fully operational by December 1976, with about 108 people (including: secretaries, clerks, drivers, etc.) employed full time at the University Centre.

The University will be financed entirely by voluntary contributions from Governments and non-governmental sources.

## Senegal Donation

THE Government of Senegal has contributed 5 million Central African francs, equivalent to \$22,087 for the United Nations University. The contribution is the first received from any Government for the University, apart from the pledge of \$100 million announced in 1973 by Japan.

# UGC's Senior Research Fellowships

THE University Grants Commission (UGC) has selected 63 candidates for the award of Senior Research Fellowships in Humanities (including Social Sciences) and science subjects.

The Senior Research Fellowship carries a value of Rs 600 p.m. for a period of two years along with a contingency grant of Rs. 2,000 per annum,

The UGC has also selected 10 Junior Research Fellows at Rs. 500 p.m. These are in addition to 202 awards of Rs 400 p.m. announced previously.

Following are the persons from the southern region who have been selected for the Senior Research Fellowships (subject within brackets):

Dr. K. S. Nair (Psychology)

Kerala University; Dr. (Smt.) Sarria Jingrao (Philosophy) Osmania University; Miss Vijaya-lakshmi Basettihalli Krishnan (Physics) Madras University; E. Rajagopal (Physics) Sri Vankateswara; Dr. C. V. Angadi (Botany) Karnatak University; M. V. Lakshman Rao (Zoology) Andhra University; J. V. George (Zoology) Calicut University; Dr. S. E. John (Marine Biology) Kerala University; Dr. (Mrs.) Renuka Rani Nagendrappa (Chemistry) Karnatak University; Dr. Jessy Jose Vangaly (Chemistry) Kerala University.

Following are the Junior Research Fellowships:

Mallikharjune Rao Palakollu (Physics) Andhra University (award for one year); V S S R. Subba Rao (Zoology) Andhra University (award for one year).

and the part-time faculty is drawn from leading community development and management training institutions in Hyderabad including Satellite—T. V. Base Production Unit, P. R. and Ad personnel.

## Osmania varsity's new course

OSMANIA University—the first to introduce a Bachelor's degree in Journalism in India—has now launched a professional behavioural science based Master of Journalism (N.J.) course from November 1, 1974. The course has an intake of 20 students admitted after an entrance examination for which only those who hold a Bachelor of Journalism degree can compete. The curriculum stresses developmental approach to mass communication comprising concepts and research techniques relevant to the press, Radio, T.V., Advertising—Market Research, Public Relations, Magazine Journalism, Advanced Publication Methods, etc., relevant to Indian conditions. A gold medal has been instituted for this course by *The Indian Herald* newspaper, Hyderabad for the student topping the list. The instruction is inter-disciplinary with multi-media application

## Self-Study Manual for Indian Varsities

THE Ford Foundation in India has made available to the Association of Indian Universities about 50/60 copies of the above manual. This self-study manual was prepared some years ago by Malcolm Willey formerly Vice-President of the University of Minnesota (USA). He did this when he was in India (Calcutta and Delhi) and there is a forward by Dr. D.S. Kothari.

Those interested in having the copy of the same may write to the Secretary, Association of Indian Universities, Rouse Avenue, New Delhi.

# Scholarship for Mining Courses

KEEPING in view the implementation of the mining programme during the Fifth and Sixth five year plans and with a view to create a climate for attracting good students, the CMAL has decided to introduce scholarships for the mining courses run at Indian School of Mines, Dhanbad.

The number of scholarships available to Indian School of Mines shall be 10 per year of the value of Rs. 150/- each per month plus actual tuition fees.

The scholarships will be granted on the basis of the results of the entrance examination held by Indian School of Mines on all-India basis each year subject to the condition that any of the scholars shall not be in receipt of any other scholarship whatsoever for prosecuting higher studies. Out of these 10 scholarships per year, 50% will be reserved for children of the employees of the CMAL/NCDC, whose salary is within Rs. 1000/- per month; 20% shall be reserved for Scheduled Castes/Tribes candidates. The scholarships will continue only in case of such scholars who obtain 65% marks in their annual examination.

If in any particular year there are no CMAL/NCDC students satisfying the conditions prescribed, the scholarships could be thrown open to the new comers. However, in the case of Sched-

uled Castes/Scheduled Tribes, the balance of the scholarships not filled up in any particular year may be carried forward to the succeeding year.

The selected scholars are assured of employment on successful completion of the course. They will, however, have to execute a Bond to serve the Company at least for a period of 5 years.

The selected scholars will be given facilities for practical training and/or summer assignments in any of the coal mines of the CMAL/NCDC.

## Britain's Open Varsity

BRITAIN'S Open University, now entering its fifth year of teaching, has produced nearly 10,000 graduates. The students who need no qualifications to enter, have consistently topped a 70 per cent pass rate for credits which count towards their eventual degrees.

A third of all the students who enrolled when the university opened in January 1971 have already graduated, and the final proportion is expected to be close to 60 per cent.

These figures, the university's Vice-Chancellor, Sir Walter Perry, said in London, had "confounded the prophets of doom". He added: "By graduating, these students are now offering the most convincing proof of their remarkable staying power. Their success is the best answer to those critics who prophesied a drop-out rate of more than 90 per cent."

### Study Centres

The open University now has 50,000 students who study in their own time by correspondence texts linked to radio and television broadcasts. The university has 250 study centres

throughout Britain which are open in the evenings and weekends for students to meet their tutors and one another. Many courses also have a one-week summer school for students.

Students work towards credits in a wide variety of courses which each last a year. A general Bachelor of Arts degree is awarded after the accumulation of six credits, based on both examination success and continuous assessment. Eight credits qualify a student for a B.A. degree with honours.

Higher educational qualifications won elsewhere can exempt students from one to three of the credits necessary for a degree.

Twelve per cent, of the 5,300 most recent graduates had less than the normal entry qualification for university, and 2 per cent had no formal educational qualification at all. The average age of students is about 40.

At a recent ceremony, five of the latest batch of graduates were introduced to reporters: an air hostess, a newspaper compositor, a husband-and-wife pair both teachers, and a parks superintendent from South Wales.

## Osmania Honours Saudi Minister

OSMANIA University conferred the Honorary degree of Doctor of Laws on Saudi Arabian Petroleum Minister Dr. Shaikh Ahmed Zaki-al-Yamani at a Special Convocation on February 9.

Receiving the degree Shaikh Yamani stressed that a nation's inherent wealth is gauged more by its achievements in the field of education and technology than on natural resources like minerals that would deplete. Citing the example of Japan, he said, the resources generated in Universities increased the wealth of the nation.

The Harvard-educated Shaikh Yamani, recalling the age-old ties between the two countries,

## Indians Honoured by Dacca Varsity

THREE eminent Indians were among eight scholars, poets and musicians honoured by the Dacca University at a special convocation last month. They are rebel poet Kazi Nazrul Islam, Ustad Ali Akbar Khan and the late scientist Professor Satyendra Nath Bose. All of them were awarded the honorary degree of doctorate.

commended Osmania as a symbol of synthesis of the different cultures of the world including that of the Arabs. Said the soft-spoken Shaikh; "I would deem it my responsibility and duty to foster closer Indo-Arab ties and



"It is incorrect to say that the doctrine I took in fish identification was a waste of effort because I'm able to dry each variety separately...."

strengthen the existing traditional bonds of amity and culture."

Osmania Vice-Chancellor Mr. P. Jagann Mohan Reddy, who read the citation, noted the "magnificent and massive" contribution of Shaikh Yamani in reshaping the entire destiny of international petroleum industry". Referring to the outstanding role of Arabic Scholars in fostering ties between East and West the Vice-Chancellor said: "Our friendship with the Arab people and our admiration of their glorious past, as well as their present world significance have been genuine, transparently consistent and of long standing, and not ephemerally inspired by purely pragmatic consideration of current expediency".

## 350 Scientists attend Chemists Convention

THE annual Convention of Chemists, 1974 which was jointly sponsored by the Indian Chemical Society, the Council of Scientific and Industrial Research, the Indian National Science Academy, the Society of Biological Chemists (India) and the Institution of Chemists (Indian), was held in the Madurai University campus recently. Prof. S. Neelakantan, Head of the Department of Na-

ral Products Chemistry and Physical Chemistry was the Convenor. Prof. R.N. Chakravarti, President of the Indian Chemical Society inaugurated the the convention which was presided over by Prof. T. Saktivelu, Principal, Nadar Mahajana Sangam S. Vellaichamy Nadar college, Madurai and member of the Syndicate. About 350 scientists from all over India and a few from abroad representing the discipline of chemistry and allied subjects attended the convention which functioned in six sections. Three symposia, fifteen invited lectures and presentation of about two hundred research papers were arranged during this convention. A Scientific exhibition was also organized as part of the Convention.

## Speech Pathology Laboratory

INDIA'S first Speech Pathology Laboratory attached to a University with sophisticated Yugoslavia equipment was declared open recently at the Department of Linguistics, Osmania University.

Giving the presidential address the internationally renowned phonetics expert from Yugoslavia, Professor Djordje Kostich, Director of Belgrade Institute for Experimental Phonetics and Speech Pathology, said that the problem of hardness of hearing in India is a sizeable one and that infant-stage remedial steps should be adopted.

## Classified Advertisements

### INDIAN INSTITUTE OF TECHNOLOGY KANPUR

#### IIT POST OFFICE KANPUR

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APPLICATIONS are invited for the posts of Senior Technical Assistants, Technical Assistants, Senior Laboratory Assistants in the Advanced Centre for Electronic Systems, at Indian Institute of Technology, Kanpur. This Centre has been sponsored by the Government of India, Ministry of Defence to carry out training and unclassified research and development work in the area of communication and Radar.

#### 1. SENIOR TECHNICAL ASSISTANT

Pay Scale: Rs. 550-25-750-EB-30-900 (Revised).

**Qualifications:** The minimum qualification will be diploma in Radio Engineering or Telecommunication Engineering or B.Sc. with minimum 8 years experience in the field of microwave hardware, solid state circuits fabrication, solid state device fabrication or digital circuitry, or equivalent training and experience in Defence Services.

#### 2. TECHNICAL ASSISTANT

Pay Scale: Rs. 425-15-500-EB-15-560-20-700 (Revised).

**Qualifications:** The minimum qualifications will be diploma in Radio Engineering or Telecommunication Engineering or B.Sc. with minimum 4 years experience in Research Laboratory or educational Institution in the field of electronics and microwaves or solid state device fabrication or equivalent training and experience in Defence Services.

#### 3. SENIOR LABORATORY ASSISTANT:

Pay Scale: Rs. 380-12-500-EB-15-560 (Revised).

**Qualifications:** The minimum qualification will be diploma in Radio En-

gineering or Telecommunication Engineering or I.Sc. ITI trade certificate in Radio Engineering with minimum 2 years experience in Research Laboratory or educational institution in the field of Electronics and microwaves.

15% and 7½% posts are reserved for candidates belonging to Scheduled Castes and Scheduled Tribes respectively. However, if no suitable candidate belonging to SC/ST is available position will be filled up by other candidates.

The positions are contractual for a period of 3 years but likely to continue. Besides pay, the posts carry allowances according to Institute rules, which at present correspond to those admissible to Central Government Employees stationed at Kanpur. Higher initial pay is admissible to specially qualified and deserving candidates. Candidates called for interview for the above posts will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Applications for the posts of Senior Technical Assistants and Technical Assistants should be made on prescribed form obtainable free of charge from the Head of the Centre by sending a self-addressed unstamped envelope of 25 cm. x 10 cm. size. Applications for the post of Senior Laboratory Assistant should be made on plain paper stating date of birth, qualifications, details of experience etc. Applications should be accompanied by a postal order of Rs. 3/- (Rs. 0.75 for Scheduled Caste/Tribe candidates) for the posts of Sr. Tech. Asstt., Tech. Asstt. and Re. 1/- (Rs. 0.25 for SC/ST candidates) for the post of Sr. Lab. Assistant. All the completed applications should reach the Head, Advanced Centre for Electronic Systems, Indian Institute of Technology, Kanpur—208016 U.P. on or before 15-3-1975.

## **PHYSICAL SCIENCES**

### **Mathematics**

1. Bahi, Sudarshan Kumar. Stability of fluid flows [University of Delhi].
2. Hegde, Venkataramana Subraya. Topics in global differential geometry with special reference to integral formulas and their applications. Karnataka University.
3. Manak Singh. Some problems in exterior ballistics of rockets. University of Delhi.
4. Trivedi, Tej Narayan. Certain dual, triple and quadruple integral equations and series. Kanpur University.

### **Physics**

1. Anand Swaroop. A model potential to study the lattice dynamical properties of metals. I.I.T., Delhi.
2. Bhattacharya, Gayetri. Resonance Raman scattering in semiconductors. I.I.T., Delhi.
3. Karmeshu. Generalized Langevin equation and random walk analysis for diffusing of Brownian particles. University of Delhi.
4. Mangotra, Lalit Kumar. Study of the production of heavy ( $Z \geq 4$ ) hyperfragments from K-interactions and their decay properties. University of Jammu.
5. Mattoo, Shiban K. Studies in radio astronomy. Gujarat University.
6. Surinder Kumar. Study of ultrasonic absorption in the intermediate state, and normal and superconducting states of pure and doped type-I superconductors. University of Delhi.
7. Ved Parkash. Parametric analysis of performance of optical systems. Punjabi University.

### **Chemistry**

1. Amin, Arunkumar Fakirhai. Synthesis and study of arborine analogues. Sardar Patel University.
2. Arulamby, S.M. Studies on solution properties of copolymers. University of Madras.
3. Bhatnagar, V.N. A kinetic investigation of oxidation of bases with oxyanions. Bhopal University.
4. Chander Shekhar. Synthesis of some naturally occurring flavonoid partial methyl ethers. University of Delhi.
5. Datta Gupta, Nandita. Effect of structure on the titration curves of some molecularly uniform polynuclear phenolic compounds and related copolymers in non-aqueous media. University of Delhi.
6. Deshmukh, Shridhar Waranrao. Synthetic studies in some flavonoid groups and a reinvestigation of the roots of *Selinum vaginalum*. University of Delhi.
7. Gohil, Rameshchandra Mohanlal. Studies on morphology of polyacrylonitrile and polyoxymethylene. Sardar Patel University.
8. Kalra, Amar Jeet. Synthesis of some partial methyl ethers of flavones and their glucosides. University of Delhi.
9. Mathur, Lilit Mohan. Studies on substituted phthalides and allied lactonic compounds. University of Delhi.
10. Mythirayee, C. Biological studies on phenols. University of Madras.
11. Nagendrappa, Renuka Rani. Some studies of donor acceptor complexes. Karnataka University.
12. Narayan Kumar. Studies on some metal chelates of some aldoximes,  $\alpha$ -ketoximes and dioximes. University of Delhi.
13. Patel, Bakulbhai Babubhai. Spectral studies of some O-hydroxyphenones and stability of metal chelates of some O-hydroxybenzophenones and their oximes. Sardar Patel University.
14. Patel, M.M. Studies in corrosion of 63/37 brass and its inhibition. Gujarat University.
15. Rastogi, Ramesh Chandra. Additivity model study of MO charge density and spin density distributions in some fluoro- and aza-naphthalanes and study of the shape of some molecules by FSGO method. University of Delhi.

16. Shah, Dineshchandra Ochhavla. Synthesis of phenanthro indolizidines and nitrogen mustards as anti cancer agents. M.S. University of Baroda.

17. Sharma, Naginder Nath. A study on the chemistry of Goseypol. University of Delhi.

18. Subhash Chander. Studies in resin acids and their derivatives. Punjabi University.

### **Earth Sciences**

1. Chansarkar, Ramchandra Arant. Drainage and slope analysis of Kosi Basin in Central Kumaon with special reference to the geological controls. M.S. University of Baroda.

2. Pathak, Cathurbhuj. A study on the cretaceous formation in and around Dawki, Meghalaya. University of Gauhati.

3. Ramanujachary, Kandadai Ranganatha. A study of telluric current variations in peninsular India. Andhra University.

### **Engineering & Technology**

1. Ashok, Jayanthi. Ellipasometric studies on magnetised ferromagnetic thin films. Andhra University.

2. Qureshi, S. Study of kinetics of electrode reactions. Bhopal University.

3. Saxena, P.C. Studies in cubical thermoelectretes of prosopis. Bhopal University.

## **BIOLOGICAL SCIENCES**

### **Anthropology**

1. Darshan Singh. Comparison of the growth pattern of school boys of well-to-do Punjabi speaking parents residing in four different states : An anthropometric study. University of Delhi.

### **Botany**

1. Chandrasekhara Menon, M.K. Morphogenetics studies on apogamy in the moss, *Physcomitrium*. University of Delhi.

2. Mishra, Sohanlal. Some aspects of the autecology of *Alternanthera ficoidea* (L.) R.Br. Vikram University.

3. Prithipal Singh. Morphology and chemotaxonomy in the systematics of *Blumea DC.* (Asteraceae-Inuleae) in India. University of Delhi.

4. Sharma, K.K.V. Gerecology and autecology of *Argemone mexicana* complex. Saurashtra University.

5. Sharma, Kalu Ram. Colonization of saprophytic micro-fungi and bacteria on the aerial parts of *Sesamum Orientale* (L.) and *Gossypium hirsutum* (L.). University of Delhi.

6. Tugnavat, Rajinder Kumar. Mineral cycling in grassland vegetation at Ujjain (India). Vikram University.

7. Vaikos, Nityanand Pralhadrao. Morphological studies in the monocotyledons-III. Marathwada University.

### **Zoology**

1. Bhatia, H.L. Studies on the toxicity of some pesticides of copper and mahua oil cake to certain fishes. Bhopal University.

2. Bhopale, Mahender Kumar. Studies on experimental ancylostomiasis, immune response and analysis of serum protein larval infection of *Ancylostoma caninum* in Swiss albino mice. Vikram University.

3. Dakshavani, K. Influence of nutrition, temperature, groupsize and photoperiod on nymphal growth and development of the cricket, *Plebejogryllus guttiventris* Walker. Karnataka University.

4. Gangadharan Nair, A.M. Studies on the sterols and their metabolism in *Trogoderma Granarium* Everts. University of Delhi.

5. Patel, Geeta C. Studies of certain aspects of the functional anatomy of some Indian birds. Gujarat University.

6. Pradeep Kumar. Morpho-functional heterogeneity of muscular organization : Correlative histophysiological investigations on the development, fibro architecture, energy metabolism, and the neuro-humorally modulated attributes of certain general as well as specialized avian and mammalian skeletal muscles. University of Delhi.

7. Shad, F.U. Studies on neuro-anatomy, cytology and histo-chemistry of the cardiac conducting system of certain amniotes. Bhopal University.

8. Shashi Prabha. Certain aspects of host plant relationships of Papilio demoleus Linn. (Lepidoptera-Papilionidae). University of Delhi.

9. Tiwari, Gomati Prasad. The gross, anatomical, histological and histochemical observations on the urinary system of Indian buffalo, Bubalus-Bubalus. Vikram University.

#### Agriculture

1. Chelam, Guda Venkata. Studies on certain aspects of the root system in some grape cultivars. Vitis species. Tamil Nadu Agricultural University.

2. Kandaswami, A. Supply response of farmers to prices of select commodities in Coimbatore Region : A micro analysis. Tamil Nadu Agricultural University.

3. Loganathan, S. Studies on certain aspects of calcium in the soils of South India. Tamil Nadu Agricultural University.

4. Mishra, Jagdish Chandra. Farm financing organizations and their operational efficiency in relation to credit needs of the farmers in Block Sadar, Distt. Basti, U.P. Kanpur University.

5. Rai, Surinder Nath. Study of production finance for high yielding varieties programme in IADP District Aligarh (U.P.). Kanpur University.

6. Ramanathan, G. Studies in the physico-chemical properties of soils of Tamil Nadu in relation to clay mineralogy. Tamil Nadu Agricultural University.

7. Tiwari, Kashi Nath. Behaviour of zinc in soils and plants. Kanpur University.

#### Veterinary Science

1. Greesh Mohan. Studies on buffalo bull semen with reference to changes in some biochemical attributes on preservation. Haryana Agricultural University.

2. Manikant Singh. Pharmacokinetic studies of some sulfonamides in buffalo calves. Haryana Agricultural University.

3. Raj Kumar. Genetic evaluation of pure bred and cross bred progeny performance in broiler chickens. Haryana Agricultural University.

4. Ramchandra Rao, Biradavolu. Studies on physical and biochemical attributes of ram semen and its preservation. Haryana Agricultural University.

5. Sindhu, Marjot Singh. Studies on the external physical traits and their relation to milk production and composition in Murrah buffaloes. Haryana Agricultural University.

## SOCIAL SCIENCES

#### Psychology

1. Janak G. Singh. A study of the college environment and student's personality in medical education. University of Delhi.

2. Patel, Somabhai Trikambhai. An investigation to study identification patterns, motivation and school achievement of talented students. M.S. University of Baroda.

#### Sociology

Ali, Abu Nishar Mohammad Irshad. Social relations among the Assamese Muslims in rural and urban situations. University of Gauhati.

#### Political Science

1. Bhaduri, Shiv Kumar Singh. The evolution of socialist policies in the Congress. Kanpur University.

2. Saksena, Mahesh Kumar. The third parliament of India, 1962-67. Kanpur University.

3. Walli, Rattan Lal. International commission for supervision and control in Vietnam : A case study of peace observation mission. Jawaharlal Nehru University.

#### Economics

1. Batra, Madan Mohan. Agricultural price variations and their impact on production : A case study of bajra in selected districts of Gujarat. University of Delhi.

2. Bhatnagar, Shiv Prem. The brass-ware industry of Moradabad : Its origin, development and importance as a medium of earning foreign exchange. Kanpur University.

3. Shrivastava, Jagdip Kumar. Tripartite consultative labour machinery in Uttar Pradesh : A study of the working of the tripartite labour machinery and its impact on labour policy and programme. Kanpur University.

#### Public Administration

1. Bhogle, Shantaram Krishnarao. Agricultural administration in Maharashtra from 1956-66. Nagpur University.

#### Education

1. Gohil, H. B. Construction and standardisation of a silent reading test in Gujarati for pupils studying in Standard VII in the schools of Saurashtra. Saurashtra University.

2. Jha, Surya Kant. An analysis of certain dimensions of creativity. M.S. University of Baroda.

3. Thimotheose, K.G. An investigation into the relationship between superstitious beliefs and family background among the high school pupils. University of Kerala.

#### Commerce

1. Sharma, Ram Autar. Business leadership in selected industries in India. University of Delhi.

## HUMANITIES

#### Literature

##### English

1. Kaul, Indu. Aldous Huxley : A study of craftsmanship with special reference to the projection of ideas. Indore University.

##### Sanskrit

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3. Bharat Singh. Uday Shankar Bhatt ke kavya kritiyon ke kavya shastriya adhyayan. Kanpur University.

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6. Dube, Tahsildar. Swatantrottar Hindi upanayas sahitya kee shilpa vidhi ka vikas, 1947-1965. South Gujarat University.

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9. Krishna Nair, P. Premchandkaleen samajik upanayas aur unke samkaleen Malayalam ke samajik upanyason ka tulnatmak adhyayan. Sardar Patel University.

10. Madhu. Swatantrottar Hindi aur Gujarat ekankiyon ka tulnatmak adhyayan. University of Delhi.

11. Mehta, Bhavna M. Comparative study of fiction literature of Shri Chatusen Shastri and Shri Dhumketu. S.N.D.T. Women's University.

12. Nelson, Sudhir Kumar. Adhunik Hindi upanyas ka privritiyatmak adhyayan. University of Jabalpur.

13. Rastogi, Shashi. Adhunik Hindi ke pramukh prabandh kavyon mein Pauranik naryon ka swarup. Kanpur University.

14. Sharma, Anand Narayan. Hindi sahitya ke itihas lekhan kee prampara. Bhagalpur University.

15. Trivedi, Sushil Kumar. Acharya Jagannath Prasad Bhanu : Vyakritav evam kritiav. Vikram University.

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Thomas, R. Murray. "Higher education in Indonesia". *Education in Asia* (6); Sept 74 : 13-16.

Yip Yat Hoong, Ed. "Higher education in South-East Asia". *Education in Asia* (6); Sep 74 : 5-8.

## CLASSIFIED ADVERTISEMENTS

UNIVERSITY OF DELHI  
Advertisement No. Estab. IV/26/75

APPLICATIONS on the prescribed form are invited for the following posts:—  
Sl. No.—Name of the Department—Designation of the posts.

1. English—One Professor (Temporary but likely to continue).
2. Music & Fine Arts—One Professor of Karnatak Music.
3. Economics—(i) Two Professors (One temporary upto 3.1.1976); (ii) Four Readers.
4. Botany—(i) One Professor (Centre of Advanced Study). (ii) One Technical Assistant.
5. Chemistry—One Professor.
6. Geology—(i) One Professor; (ii) One Reader; (iii) One Technical Assistant.
7. History—One Reader.
8. Psychology—One Reader (Temporary upto 15-8-76).
9. Faculty of Science—One Reader in History of Science and Scientific Method.
10. Modern Indian Languages—One Reader in Marathi.
11. Buddhist Studies—One Professor.
12. Human Geography—One Professor.
13. Mathematics—(i) One Professor; (ii) One Reader.
14. Operational Research—(i) One Professor; (ii) One Reader.
15. Mathematical Statistics—One Reader.
16. Computer Science—One Professor.
17. Zoology—One Reader.
18. Sociology—One Reader.
19. Law—Two Readers (Morning).
20. Commerce—Two Readers (one for Evening Classes) for main Department.
21. South Campus—Two Readers in Commerce.
22. Linguistics—One Reader.
23. University Medical College—(i) Readers in Physiology; (ii) Readers in Social & Preventive Medicine; (iii) Readers in Forensic Medicine.
24. Physics—Readers (One permanent and two temporary).
25. Central Office—(i) One Deputy Controller of Examinations; (ii) Assistant Registrars; (iii) One Garden Overseer; (iv) One Record Keeper.
26. Central Institute of Education—One Principal.

The existing scales of pay of the posts are:

- (i) Professor/Principal—Rs. 1100-50-1300-60-1600.
- (ii) Reader—Rs. 700-50-1250.
- (iii) Deputy Controller of Examinations—Rs. 1100-50-1600 (Revised).
- (iv) Assistant Registrars—Rs. 700-40-1100-50-1300 (Revised).

(v) Garden Overseer/Record Keeper/Technical Assistant—Rs. 425-15-500-EB-15-560-20-700

(Revised)

NOTE: The scales of pay of the under-mentioned posts are likely to be revised as noted against each as per University Grants Commission's decision:—

(i) Professor/Principal—Rs. 1500-60-1800-100-2000-125/2-2500.

(ii) Readers — Rs. 1200-50-1300-60-1900.

All posts carry D.A., C.C.A., H.R.A. as admissible under the rules in force from time to time.

### I. ESSENTIAL QUALIFICATIONS:

#### 1. For Professorship:

A scholar of eminence.

Independent published work of high standard and experience of teaching post-graduate classes and guiding research for a considerable period desirable

#### 2. For Readerships (except Readerships for Medical College).

Good academic record with first or high second class Master's Degree in the subject concerned with a Doctor's Degree or equivalent published work.

Independent published work (in addition to the published work mentioned above) with at least five years teaching experience in Honours Post-graduate classes essential.

#### 3. For Readerships in Physiology.

M.B., B.S., M.D./M.Sc./Ph.D./D.Sc. in Physiology.

Teaching/Research Experience: As Assistant Professor/Lecturer in Physiology for 3 years in a Medical College.

#### 4. For Readerships in Social & Preventive Medicine:

M.B., B.S., M.D. (Social & Preventive Medicine)/Community Medicine/Speciality Board of Social & Preventive Medicine (U.S.A.), Dr. P.H. (Johns Hopkins)

Dr. P.H. (Harvard/Dr. P.H. (California)/M.D. (Medicine)/with D.P.H.

Teaching/Research Experience: A: Assistant Professor/Lecturer in Social & Preventive Medicine for 3 years in a Medical College.

#### 5. For Readerships in Forensic Medicine:

M.B., B.S., M.D. (Forensic Medicine)/M.D. (Path.)/Speciality Board of Pathology (U.S.A.).

Teaching/Research Experience: As Assistant Professor/, Lecturer in Forensic Medicine for 3 years in a Medical College.

#### 6. For Deputy Controller of Examinations:

Second Class Master's Degree and experience of educational administration at the executive level for at least 8 years.

#### 7. Assistant Registrars:

A second class Master's Degree with 10 years' office experience of which at least 5 years' should be in a supervisory capacity.

#### 8. For Record Keeper:

A second class Degree of a recognised University with Diploma in Archives keeping.

#### 9. For Garden Overseer:

B.Sc. (Agriculture).

#### 10. For Technical Assistant in Botany:

Graduate in Science. Experience in Laboratory Techniques.

#### 11. For Technical Assistant in Geology:

First or Second Class B.Sc. Degree of an Indian University with Physics, Chemistry and Mathematics as optional subjects.

#### 12. For Principal, Central Institute of Education:

Good academic record with a first or high second class Master's Degree in Education with Doctor's Degree or equivalent published work and teaching experience of Post-Graduate Classes of not less than 10 years,

OR

Good academic record with a first or high second class Master's Degree in Education with teaching experience of Post Graduate Classes of not less than 15 years.

### II. SPECIAL/DESIRABLE QUALIFICATIONS

#### 1. For Professorship in Karnatak Music:

Eminence in the field of public performance preferably in Veena.

Experience of teaching supported by illustrious pupils and original composition/ work of high standard.

#### 2. For the first Professorship in Economics:

The Professor appointed in this post, in addition to his normal duties in the Department, will be expected to supervise research work in Area Studies (Pakistan and/or Bangladesh Economy).

#### 3. For the Second Professorship in Economics:

The candidate should have specialization in both analytical and empirical aspect of public Economics.

#### 4. For first post of Readership in Economics:

Master's Degree in Economics or Ph.D. in Economic Statistics.

#### 5. For second post of Reader in Economics:

The candidate with specialization in the Area of Agricultural Economics will be given preference.

**6. For Professorships in Botany:**

Specialization in Structural and Development Botany.

**7. For Professorship in Chemistry (Physical or Inorganic Chemistry):**

Specialization and research experience in any of the following Areas:

Electrochemistry, Polymer Chemistry, Radiation Chemistry, Chemical Spectroscopy Theoretical and Quantum Chemistry, Chemical Thermodynamics including Statistical Thermodynamics, X-Ray Crystallography, Chemical Kinetics.

Specialization in Inorganic Chemistry and Research Experience in any of the following Areas:

Coordination Chemistry, Analytical Chemistry, Radiation Chemistry.

**8. For Readership in Geology:**

Specialization in one or more of the following subjects:-

Geochemistry, Geophysics, Applied Geology, Structural Geology, Geomorphology, Mineral Fuels.

**9. For Readership in History:**

Specialization in Ancient Indian History.

**10. For Readership in History of Science & Scientific Methods:**

Candidates must have specialized in teaching or research in History of Science and Scientific Methods, and should be capable of teaching the subjects to Honours and Post-graduate classes and also be able to guide research.

**11. For Readership in Marathi:**

Knowledge of Sanskrit and Hindi and ability to teach in English for the M. Litt. Course for the Comparative Literature.

**12. For Professorship in Buddhist Studies:**

Should be proficient in Sanskrit and Pali and must have specialised in one or more of the following subjects:

(i) Buddhist Philosophy with all its divisions and schools (ii) Buddhist History and Culture (iii) Buddhist Literature, Sanskrit and Pali. Knowledge of Tibetan and/or Chinese desirable.

**13. For Professorship in Operational Research:**

Specialisation in Mathematical Programming.

**14. For Readership in Operational Research:**

Specialisation in one of the following topics: (1) Inventory Control (2) Theory of Queues, and (3) Theory of Marketing.

**15. For Professorship of Computer Science:**

Doctor's Degree in Electrical Engineering/Physics/Electronics/ Communication Engineering/Mathematics.

Atleast 5 years experience of working in a Computer system as well as on the development of Computer Science techniques having relevance to Natural Science or Social Science.

**16. For Readership in Zoology:**

Specialization of Cell Biology, Endocrinology, Fishery Biology, Entomology, Ecology and Genetics.

**17. For Readership in Sociology:**

Intensive fieldwork experience.

**18. For Readership in Commerce for South Campus:**

Specialisation in (i) Organisation Theory and Behaviour (ii) Tax Laws and Practice. Preference will be given to a person, who is a Chartered Accountant also.

**19 Readership in Linguistics**

Specialization and research interest in Experimental Phonetics and Acoustics.

**20. For Readership in Physics:**

Specialization in Solid State Physics, Nuclear and High Energy Physics, Spectroscopy, Plasma and Astrophysics, Particle Physics and field Theory, Statistical Physics and Many Body Theory.

**21. For Deputy Controller of Examinations:**

Experience of University administration, familiarity with the working of the University bodies and Institution and relating to conduct and confidential work of Examinations.

**22. For Principal, Central Institute of Education:**

Administrative experience in a recognised institution teaching degree classes or above.

Experience in guiding Ph.D. students.

**23. For Technical Assistant in Botany:**

Should be conversant with taking Microphotography and Microphotography with natural and artificial illumination including developing and printing. Experience of sketching plant materials from entire specimens as well as from microscopic preparations.

**24. For Technical Assistant in Geology:**

At least three years' experience in an X-Ray or Electronics Laboratory.

The prescribed application form can be had from the Information Office of the University either personally or by sending a self-addressed envelope (5" x 11") with postage stamps worth Rs. 1.75.

Selected candidates will have to produce the original documents relating to their age, qualifications, experience, etc before joining the appointment.

Application (separate for each post) accompanied by attested copies of Degrees and other certificates, etc. should reach the undersigned not later than 15th March, 1975.

Applications for the posts of Readers in Commerce for South Campus should be submitted to the Director, South Campus, D-25-D, N.D.S.E. Part II, New Delhi.

**NOTE:**

1. It will be open to the University to consider the names of suitable candidates for teaching posts who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases in respect of all posts on the recommendations of the Selection Committee.

2. Convassing in any form by or on behalf of the candidate will disqualify.

3. Candidates from outside Delhi for posts of Professors, Principal and Readers called for interview will be paid 1½ Second Class (present) Railway Fares as per rules.

4. Certain percentage of posts in the cadre of Non-teaching posts are reserved for Scheduled Caste/Tribes and Ex-Servicemen.

5. Those who had applied in response to earlier advertisements for the posts mentioned above, need not apply again but in case they have any additional information to supply, they may do so.

Sd/-  
REGISTRAR

**INDIAN INSTITUTE OF TECHNOLOGY KANPUR  
IIT POST OFFICE  
KANPUR**

**No. Advertisement No. 4/75**

APPLICATIONS are invited for the following positions in various Depts/Sections in this Institute.

**1. DEPARTMENT OF PHYSICS:**

**(i) Central Optical Spectroscopy Lab.**

Name of the Post:—Technical Assistant.

Pay Scale:—Rs. 425-15-500-EB-15-560-20-700.

No of posts:—one (1).

**Qualifications & Experience:**

**(a) Essential:**

B.Sc./Diploma in Electrical Engineering or Electronics or any equivalent qualifications.

**(b) Desirable:**

4 years experience in a laboratory. Experience in handling sophisticated optical spectrophotometers, compressors, hydraulic press and pneumatic dryers etc. will be an additional qualification. Qualifications could be relaxed for exceptionally experienced person and/or suitable other grades could be offered depending on the qualifications.

Persons not having the desired qualifications of Technical Assistant, but hav-

ing sufficient experience in the field may be considered to the post of Senior Laboratory Assistant in the pay scale of Rs. 380-12-500-EB-15-560.

(ii) Van de Graaff Laboratory:

Name of the post:—Technical Officer.  
Pay scale:—Rs. 650-30-740-35-810-  
EB-35-880-40-1000-EB-40-1200.

No. of posts:—1 (one).

**Qualifications & Experience:**

**Required qualifications:**

B.E./B.Tech. in Electronics/Electrical Engineering or M.Sc. in Physics plus six years experience OR equivalent qualifications.

(a) **Essential Experience:**

Experience of working with a nuclear accelerator, of repairing nuclear electronic systems and of assembling, testing etc. of high vacuum systems.

(b) **Desirable Experience:**

Familiarity with auxiliary systems used with nuclear accelerator such as water-chilling — Plant, High Pressure Systems, Nuclear detection systems and Health-Monitoring Systems.

Preference will be given to candidate having familiarity with Van de Graaff Accelerator and modern nuclear data processing systems.

The Selection Committee may relax the required qualifications for candidates having direct experience of maintenance, repairs etc. of Van de Graaff machine and its auxiliary systems.

## 2. NUCLEAR ENGINEERING AND TECHNOLOGY PROGRAMME:

**Name of the Post:**—Senior Technical Assistant.

**Pay Scale:**—Rs. 550-25-750-EB-30-900  
**No. of posts:**—1 (one).

**Qualifications & Experience:**

M.Sc. degree plus two years experience in designing and repairing nuclear electronic equipment.

**OR**

B.Sc./Diploma in engineering plus eight years experience in the field of electronics preferably nuclear instrumentation.

Persons not having the desired qualifications of Senior Technical Assistant, the persons may be considered to the post of Technical Assistant in the pay scale of Rs. 425-15-500-EB-15-560-20-700 in the qualifications:

B.Sc./Diploma in Engineering plus four years' experience in the field of nuclear electronics.

## 3. CENTRAL AIR-CONDITIONING PLANT/RAU

**Name of post:**—Technical Officer.

**No. of posts:**—1 (one).

**Pay Scale:**—Rs. 650-30-740-35-810-  
EB-35-880-40-1000-EB-40-1200.

**Qualifications & Experience:**

**Job Requirement:** To supervise the work of operation and maintenance of

the Central Air Conditioning Plant and its ancillaries. He will also be required to supervise the work of repair and maintenance of water coolers, window air-conditioners and other cooling equipment in the Institute.

**Qualification required:**

B.Tech. or equivalent in Mechanical Engineering from a recognised institution with 6 years of relevant experience;

**OR**

Diploma in Refrigeration and Air-conditioning with 13 years of relevant experience.

**Desirable (Additional qualifications):**

—Degree or Diploma in Electrical Engineering

—Having worked in similar capacity elsewhere

Qualifications and/or experience may be relaxed at the discretion of the Selection Committee

If a suitable candidate is not found, no appointment.

## 4. GRAPHIC ARTS

**Name of the posts:**

(i) **Technical Assistant (Binding)**

(ii) **Technical Officer**

**No. of posts:**—1 (one) each.

**Pay Scales:**—TA: Rs. 425-15-500-  
EB-15-560-20-700  
TO: Rs. 650-30-740-35-810-EB-880-  
40-1000-EB-40-1200.

**Qualifications & Experience:**

(a) **Technical Officer:**

**Essential:**

Three years Diploma in Printing Technology or equivalent.

**Desirable:**

—Degree in Printing Technology or Diploma in Photography and or Diploma in Draughting

—Thirteen years experience in the Trade in a responsible position. Preference will be given to the candidates who have an experience in running and maintenance of letter Press, Offset Press, Process Photography and Drawing and Draughting work.

(b) **Technical Assistant (Binding)**

**Essential:**

Diploma Assistant

—Diploma in Printing Technology (letter Press Group).

—Five years experience in Binding & Composing in a Supervisory capacity.

—Qualifications are relaxable in the case of highly experienced and deserving candidates.

## 5. DEPARTMENT OF ELECTRICAL ENGINEERING:

**Name of posts:**—Senior Technical Assistant & Sr. Laboratory Assistant.

**No. of posts:**—2 (two) STA and 1 SLA

**Pay Scales:**—STA Rs. 550-25-750-  
EB-30-900.

SLA Rs. 380-12-500-EB-15-560.

**Qualifications and Experience :**

(i) **Senior Technical Assistant:**

B.Sc./Diploma in Electrical/Electronics Engineering plus eight years experience.

Persons not having desired qualifications of Senior Technical Assistant but having sufficient experience in the field may be considered for the post of Technical Assistant in the pay scale of Rs. 425-15-500-EB-15-560-20-700 if they have the following qualifications:—

B.Sc./Diploma in Electrical/Electronics Engineering plus four years experience.

(ii) **Senior Laboratory Assistant:**

High School and Diploma in Electrical/Electronics Engg.

Electronic circuits fabrication and testing, Electronic Instrument Servicing and maintenance, semiconductor devices fabrications, microwave techniques and measurements, digital circuits and hardware, electrical machines and power electronics. Experience in handling/inventory of large variety of electronic components is desirable

## 6. ADMINISTRATION SECTION:

**Name of posts:**

(a) **Assistant (Hindi Translator):**

(b) **Lower Division Clerk (Hindi Typist):**

**No. of posts:**—1 (one) each

**Pay Scales:**

(A) **Assistant (Hindi Translator):**  
Rs. 425-15-500-EB-15-560-20-700-EB-  
25-800.

(B) **LDC (Hindi Typist):**  
Rs. 260-6-290-EB-6-326-EB-8-390-10-  
400

**Qualifications and Experience :**

(i) **Assistant (Hindi Translator):**

Should be a Graduate from a recognised University with English and Hindi Literature as his subjects

Should have worked as Translator for a minimum of 5 years in a Govt. department/public sector undertaking or a publishing house of repute. Fluency in translation work from English to Hindi and vice versa is essential.

(ii) **L.D. Clerk (Hindi Typist):**

Matriculate (Graduate preferred). Knowledge of Hindi Typewriting essential with a speed of 35 words per minute.

Knowledge of English typewriting with a speed of 30 words per minute preferable.

## 7. DEPARTMENT OF CHEMISTRY (N.M.R. Central Research Facility)

**Name of posts:** Technical Assistant.

**No. of post:** 1 (one).

**Pay Scale:** Rs. 425-15-500-EB-15-560-  
20-700.

**Qualifications & Experience:**

**Essential:**

B.Sc. Degree with Physics or Chemistry as major subject

**OR**

Diploma in Engineering plus four years experience in research laboratory.

Desirable:

Good working knowledge of electronics.

Prefecture will be given to candidates with experience in maintenance and operation of NMR spectrometers.

Job Requirements:—

(i) To operate and maintain a high resolution NMR spectrometer.

(ii) To provide high quality NMR spectral service and

(iii) Additional work pertaining to running of the NMR facility

Persons not having desired qualifications of Technical Assistant but having sufficient experience in the field may be considered for the post of Senior Laboratory Assistant in the Pay Scale of Rs. 370-12-500-EB-15-560, if they have the following qualifications:—

B.Sc. degree with Physics or Chemistry as major subjects or Diploma in Engineering

Posts are reserved for candidates belonging to Scheduled Caste/Scheduled Tribes. However, if no suitable candidate belonging to SC/ST is available positions will be filled up by other candidates.

Posts are permanent, carry benefits in the shape of CPF-cum-Gratuity Scheme or CPF-cum-Pension-cum-Gratuity Scheme. Age of retirement is sixty years. Besides pay, the posts carry allowances according to Institute Rules which at present correspond to those admissible to Central Government Employees stationed at Kanpur. If called for interview the candidates will be paid second class fare from the place of duty to Kanpur and back by the shortest route.

Every application should be accompanied by an application fee in the form of a cross postal order at the rates below:—

Rs.	
(a) Post carrying a scale of pay of which is less than Rs. 425/- p.m. (in case of scheduled caste/ Scheduled Tribe candidate)	1 00
(b) Post carrying a scale of pay the initial pay of which is Rs. 425/- p.m. or over but less than Rs. 650/- p.m. (in case of Scheduled Caste/ Scheduled Tribe candidates)	0 25
(c) Post carrying a scale of pay the initial pay of which is Rs. 650/-p.m. or above (in case of Scheduled Caste/ Tribe candidates)	3 00 0 75 7 50 1 87

All postal orders should be made payable to the Registrar, Indian Institute of Technology, Kanpur. In case the postal orders of the required denominations are not available the application fee be remitted by money orders and the name and address of the candidate, the post applied for and the last date of re-

ceipt of application should be stated in Money order coupon. Postage stamps will not be accepted towards application fee.

Applications for the posts in Category (b) and (c) above should be made on prescribed forms obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm. x 10 cm. size. Applications for the remaining posts should be made on plain paper stating date of birth, qualifications, experience etc.

All applications should reach the Registrar, Indian Institute of Technology, Kanpur, IIT Post Office, Kanpur, 208016 on or before March, 15, 1975.

INDIAN INSTITUTE OF TECHNOLOGY KANPUR  
COMPUTER CENTRE  
KANPUR

Advertisement No. 5/75

APPLICATIONS are invited for six apprentice programmers in the Computer Centre

Qualifications. M Sc. first class in Physics/Mathematics/Statistics from a recognized University.

Age. Less than 23 years.

Selection will be based on an aptitude test and interview. Selected Candidates will be paid consolidated amount of Rs. 350/- per month during the two-year period of training, and are required to sign a bond not to leave the apprenticeship during the training. At the end of the apprenticeship, there is no guarantee that they will be offered a regular job at the Computer Centre.

Apprentices will receive training in the following:—

1. Learn FORTRAN and Assembly language programming in depth
2. Attend and satisfactorily complete selected courses offered by the faculty of Computer Science.
3. Learn and subsequently operate independently all the computer systems in the Centre.
4. Work as consultants to students and faculty in the Institute.
5. Maintain the existing software and develop new software and utility packages with the guidance of experienced programmers.

Apprentices should be prepared to work during any time of the day or night as required by the supervisors. They will not be allowed to register for higher degrees at IIT-Kanpur or elsewhere during their apprenticeship.

Persons desirous of joining as apprentices may send their biodata to the Head, Computer Centre on plain paper giving the following information latest by 15th March, 1975.

Name, Father's name, mailing address, Date of Birth and age on January 1, 1975, Marital Status, Sex, Educational Qualifications (with name of University), College, Degree or diploma obtained with marks and rank etc.).

Candidates called for interview will be paid ordinary second class return fare by shortest route of journey on production of railway cash receipt.

INDIAN INSTITUTE OF TECHNOLOGY KANPUR  
IIT POST OFFICE  
KANPUR

Advertisement No. 7/75

APPLICATIONS are invited for the following faculty positions at the Indian Institute of Technology, Kanpur.

Professor: Rs. 1500-60-1800-100-2000-125/2-2500.

Assistant Professor: Rs. 1200-50-1300-60-1900

Lecturer: Rs. 700-40-1100-50-1300-60-1600

There are ten academic departments in the Institute, as below:—

Aeronautical Engineering, Chemical Engineering, Chemistry, Civil Engineering, Electrical Engineering, Humanities & Social Sciences (limited to the fields of Economics, English, Philosophy, Psychology and Sociology only), Mathematics, Mechanical Engineering, Metallurgical Engineering and Physics.

In addition there are interdisciplinary programmes in the following areas:

Computer Science, Industrial and Management Engineering, Material Science and Nuclear Engineering and Technology.

The Institute is involved in advanced teaching and high level research in Humanities and Social Sciences and in the above branches of engineering and science.

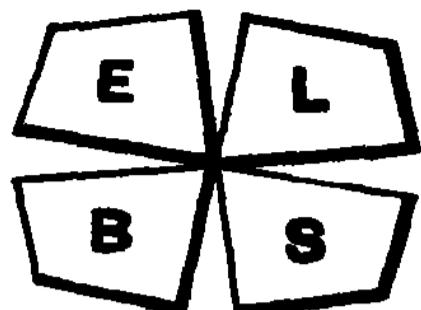
Applicants must have a good academic record preferably with a Ph.D. Degree. A good research record and teaching experience is desirable:

Posts are permanent. The posts carry retirement benefits in shape of GPF-cum-Gratuity Scheme or GPP-cum-Pension-cum-Gratuity Scheme. The age of retirement is sixty years. Besides the pay, the posts carry allowances according to the Institute rules, which at present correspond to those applicable to the Central Government employees stationed at Kanpur. A higher initial pay is admissible to specially qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Applications should be made on the prescribed forms, obtainable free of cost from the Registrar of the Institute sending a self-addressed unstamped envelope of 25 cm. x 10 cm. size. Applications be accompanied by a Indian Postal Order of Rs. 7.50 (Rs. 1.87 for SC/ST candidate).

Those abroad may apply on plane paper giving full particulars including the Department and area of interest. They should give names of three experts who can comment on the work and competence of the applicant.

All the applications should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016 U.P. (India) on or before 31st March, 1975.



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<i>Author</i>	<i>Title</i>	<i>Edition</i>	<i>Publisher</i>	<i>Price (Rs.)</i>
JAMES, WO	Cell Respiration	1st	EUP	17
ROBERTS, MB	Biology: A Functional Approach	1st	Nelson	32
STREET, HF et al	The Physiology of Flowering Plants	1st	Edward Arnold	18

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*New Edition*

EMELEUS, HJ et al	Modern Aspects of Inorganic Chemistry	4th	Routledge	35
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JEFFREY, A	Mathematics for Engineers and Scientists	1st	Nelson	20
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*New Edition*

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COOKE, GW	Fertilizing for Maximum Yield	1st	Crosby Lockwood	17
PURSEGLOVE, JW	Tropical Crops Dicotyledons Vols 1 and 2 (combined)	1st	Longman	45
THORNTON, H et al	Textbook of Meat Hygiene	6th	Bailliere/Tindall	56

*New Edition*

BLOOD, DC et al	Veterinary Medicine	4th	Bailliere/Tindall	50
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WENHAM EJ et al	Physics—Concepts and Models	1st	Addison-Wesley	35
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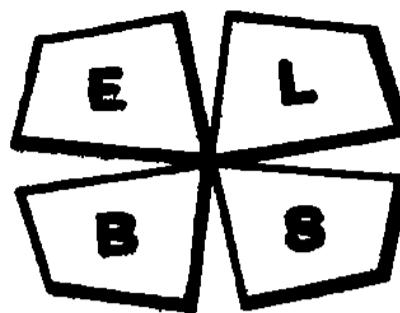
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UVAROV, EB et al	A Dictionary of Science	4th	Penguin	3
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IN 1974**

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<i>Author</i>	<i>Title</i>	<i>Edition</i>	<i>Publisher</i>	<i>Price (Rs.)</i>
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FRASER, H et al	Applied Linguistics and the Teaching of English	2nd	Longman	8
SAUNDERS, P	Introductory English	1st	ULP	5
WOOD, FT	English Prepositional Idioms	1st	Macmillan	9
<i>New Edition</i>				
HORNBY, AS et al	The Advanced Learner's Dictionary of Current English	3rd	OUP	26

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*New Titles*

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HANSON, JL	Monetary Theory and Practice	5th	Macdonald/Evans	15
HOWARD, LR	Auditing	4th	Macdonald/Evans	7
LIPSEY, RG	An Introduction to Positive Economics	3rd	Weidenfeld & Nicolson	36
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PREST, AR	Public Finance in Theory and Practice	5th	Weidenfeld & Nicolson	36
TAYLOR, AH et al	Financial and Cost Accounting for Management	6th	Macdonald/Evans	18

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178 Backbay Reclamation  
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5 Shakespeare Sarani  
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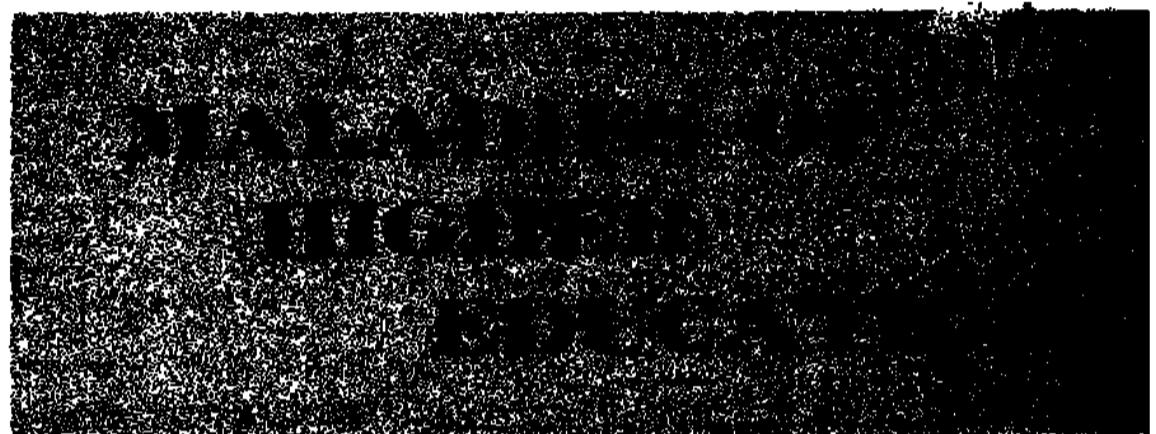
*On a First-class  
Air-Bus*



# University News

Prof. Hasan Lauds  
AIU's Work

CHRONICLE OF HIGHER EDUCATION & RESEARCH \* April 1975 Re. 1.25



## CLASSIFIED ADVERTISEMENTS

### MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE, LAW COLLEGE ROAD, POONA 4

APPLICATIONS are invited for the following post:

Reader in Chemistry (Biochemistry/Organic Chemistry)

Pay Scale (Revised): Rs. 1100-50-1600 plus allowances as admissible.

Qualifications: 1. Doctorate Degree in the subject from Recognized University,

2. Research Publications in Recognized Journals other than Doctorate Thesis,

3. Experience in Post-Graduate Research Guidance and Teaching,

4. Experience in Laboratory Organization.

Applications stating age, qualifications, experience, etc. should be sent to the Director, Maharashtra Association for the Cultivation of Science, Law College Road, Poona 4 on or before 1st May 1975. Employed candidates should send their applications through proper channel.

### INDIAN INSTITUTE OF TECHNOLOGY KANPUR

Advertisement No. 11/75

APPLICATIONS are invited for the following posts at this Institute:

Name of post: Physical Training Instructor:

(i) Football and Hockey Coach: 1 No  
(ii) Basketball Coach:—1 No.

Pay scale : Rs. 425-15-500-EB-15-560-20-640-EB-20-700-25-750.

#### Qualifications:

Essential: Graduate with diploma in Physical Education.

OR

High School with participation in International meets as members of a National Team and Coaching Certificate from National Institute of Sports or equivalent recognised by N.I.S.

#### Experience:

Atleast five years experience of imparting systematic training as Hockey and Football/Basketball Coach in University, College of Association.

#### Preferential

Preference will be given to those who are of National repute and have represented the State in Hockey and Football/Basket Ball etc.

One post is reserved for candidates belonging to Scheduled Caste/Scheduled Tribes. However, if no suitable candidate belonging to SC/ST is available

position will be filled up by other candidates.

Posts are permanent and carry benefits in the shape of GPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme. The age of retirement is 60 years. Besides pay, the posts carry allowances according to Institute Rules, which at present correspond to those admissible to Central Government employees stationed at Kanpur. If called for interview the candidates will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route. Persons already in Govt. or Semi-Govt. organisations should apply through proper channel.

Applications should be made on the prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm size. Application should be accompanied by a postal order for Rs 3.00 (Rs 0.75 for SC/ST candidates) should reach the Registrar, Indian Institute of Technology, Kanpur, IIT Post Office, Kanpur-208016 U.P. latest by 15th April 1975.

### INDIAN INSTITUTE OF TECHNOLOGY IIT POST OFFICE KANPUR

Advertisement No. 12/75

APPLICATIONS are invited for the post of Librarian in the Central Library of the Institute in the scale of Rs. 1100-50-1300-60-1600 (to be revised as per Third Pay Commission recommendations).

#### QUALIFICATIONS:

##### Essential:

High Second Class Post-graduate degree in Science/Engineering Technology with Diploma in Library Science.

OR

Ph.D. degree in Science/Technology with Scholarship of high order.

#### Preference:

(1) Candidates having First Class Bachelors or Masters Degree in Library Science will be preferred.

(2) At least 10 years experience in a position of responsibility in an academic or research Library (preferably in a University or Technical Institute of higher education) or as an Administrator in a related field or with extensive bibliographical activity in the areas of science and technology. Must have an understanding of acquisition of foreign books and journals.

(3) Knowledge of Hindi and of a modern European language other than English will be preferred.

(4) Demonstrated organizational abilities and leadership qualities.

(5) Valuable contributions to the professional literature. Special consideration will be given to experience with modern Library systems and knowledge and/or experience in information science, especially in the use of Computer for documentation and information retrieval.

The Indian Institute of Technology Kanpur is one of the five Institutions which were established by Government of India to provide higher technical education. The Central Library of IIT Kanpur has a collection of more than 1,00,000 books and bound periodicals covering engineering, technology, science, humanities and social sciences with current subscriptions to over 1600 periodicals and serials. The Librarian at this Institute will belong to the academic community, and will be a member of the Academic Senate. He will be responsible for developing the library along modern lines, providing dynamic and imaginative leadership to the Library staff which includes over 60 members trained in library works.

Those not sufficiently qualified or experienced for the Librarian's post may be considered for appointment at the level of Deputy Librarian in the scale of Rs. 700-50-1250 (to be revised as per T.P.C. recommendations).

Post is reserved for candidates belonging to Scheduled Caste/Scheduled Tribes. However, if no suitable candidate belonging to SC/ST is available position will be filled up by other candidates.

Post is permanent and carry retirement benefits in the shape of CPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme. The age of retirement is 60 years. Besides pay, post carry allowances according to Institute rules, which at present correspond to those admissible to Central Government Employees stationed at Kanpur. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route. All applicants from Govt./Quasi-Govt. Organisations, Public Undertakings should forward their applications through proper channel.

Applications from persons in India should be made on prescribed forms obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm. x 10 cm. size.

Persons abroad may apply on plain paper (three copies), including detailed account of their academic and professional records and reprints of publications, fields of specialisation etc. They should also give names of at least three persons who are intimately acquainted with their work. The application accompanied by a Crossed Indian Postal Order for Rs. 7.50 (Rs. 1.87 for Scheduled Caste/Tribes candidates), should reach the Registrar, Indian Institute of Technology, Kanpur, IIT Post Office, Kanpur-208016 U.P. by April 30, 1975.

# UNIVERSITY NEWS

Vol. XIII  
No. 4



APRIL  
1975

*A Monthly Chronicle of  
Higher Education*

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# 50th Annual Meeting of AIU

On the concluding day of the golden jubilee session of the Association of Indian Universities held at the Indian Institute of Technology, New Delhi on March 25, 1975, the annual business session of the Association as well as the plenary session of the seminar were held. Dr. V.K.R.V. Rao was invited to deliver the valedictory address on 'Higher Education and Development.'

At the plenary session of the Association the reports presented by the Chairmen of the three different groups were received and discussed.

Dr. Malcolm S. Adiseshiah speaking after the presentation of the reports pointed out that considerable thinking was still necessary to ensure higher education playing its proper role in the development of the country.

Dr. V.K.R.V. Rao who gave his valedictory address outlined firstly what in his opinion were the constituent parts of the term 'development'. He mentioned increase in the GNP, distributive justice, removal of regional imbalances, employment oriented development, social and political development, secularism and national integration as some of those parts.

He then went on to outline the two major functions of a university, namely, development of skills and development of attitudes. In this process universities had a positive role to play in development. How this link is to be established is a matter that required considerable attention at the policy level. For this purpose he gave three suggestions: Firstly, admissions to universities ought to be made selective otherwise the country's economy could not afford it. For this purpose it was very essential for the Government to delink degrees from jobs. Although this matter was being talked of since 1919 no positive action had been taken so far. But this issue had assumed an urgency and a decision on it could no longer be delayed. Secondly, while skill and development was still required to be given on a selective basis there ought to be no limit in the role of the universities as developer of attitudes. For this purpose he suggested open universities, correspondence courses, etc. He also pleaded decentrallisation of the university system including the setting up of autonomous colleges.

One of the other factors which required to be tackled was with regard to the ways and means of taming 'politics' in the universities. Gone are the days when one could say that politics 'should not be allowed inside the university'. Politicalisation is a fact of life and universities have to devise ways and means of curbing a deleterious factor of curbing politicalisation. This could be done by having theoretical discussions on the various 'isms' within the university.

At the annual meeting of the Association one of the major decisions taken was the abolition of 'Associate Membership'. Hitherto institutions which were deemed to be universities were admitted to the associate membership of the Association but now onwards they would be entitled to full membership. Seven universities were admitted this year, namely, the Gujarat Agricultural University, Ahmedabad, the Jawaharlal Nehru Technological University, Hyderabad, the Assam Agricultural University, Jorhat, the Garhwal University, Srinagar (Garhwal),

*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

The 3-day Golden Jubilee celebrations of the Association of Indian Universities concluded at Indian Institute of Technology, New Delhi on March 25, 1975. About 60 members of the Association, 58 academics, representatives of various institutions & various Govt departments, 10 foreign delegates including Sir Hugh W. Springer, Secretary-General of Association of Commonwealth Universities participated.

Excerpts from the Address of the Union Education Minister, Prof. Nurul Hasan, who released the History of the AIU and also presided over the first session of the Seminar on "Higher Education and Development" are reproduced below.

# Prof. Nurul Hasan lauds AIU's work

## Reform of Higher Education system necessary

THE Association, which is the oldest organisation in this field, has now completed fifty years of useful service to the cause of higher education in the country, said Prof. Nurul Hasan. It has brought the Indian universities together on a common platform for mutual service and support. It has promoted inter-university collaboration in several fields and developed some significant programmes such as those of inter-university competitions in games and sports. It has also been functioning as a clearing-house of information and bringing out a number of publications on different aspects of the university system for use by the academic community as well as by the public. It has been championing the cause of higher education and consistently advocating its spread among the people, an improvement in its standards, its contribution to national development, and similar issues. He made a particular mention, of the brave defence of the fundamental principle of university autonomy which the Association has often undertaken. The entire academic community, the public and the Government are keenly appreciative of these valuable services. He hoped, in the years ahead, the Association will continue to serve the cause of higher education even more impressively in these and other ways.

Welcoming the organisation of this seminar on the important theme of higher education and development prof. Hasan added: During the last twelve decades, higher education in India has witnessed a tremendous expansion. There are now more than 100 universities or institutions of similar status, about 4000 affiliated Colleges, a total enrolment of about 4 million at the university stage, and an annual expenditure of about Rs. 3200 million on higher education. There have also been several significant qualitative gains. The modern university system has enabled us to discover ourselves and a critical study of such important relevant issues as our past history, great cultural heritage, or present day problems and their solutions have come

to occupy a central place in higher education. Research or the quest for new knowledge now occupies an important place in higher education; and our university system has also introduced us to the growing knowledge in the other countries of the world, so that we have become real partners in the universal

---

### Prime Minister Indira Gandhi said in a Message :

"Concepts of education, especially higher education, are undergoing changes all over the world. A few decades ago it was recognised that scholastic education would not equip young people to meet the problem being created by technological change. It is now realised that technological competence is not enough. The very problem of survival demands more than acquisition of knowledge and scientific knowhow. Education must train the emotion and evoke a capacity for harmony. It should foster reverence for life and talent for growing without exploiting others, whether it be people, other characters or the environment. There is need for constant debate and exchange of ideas on concepts and values in education. During the last 50 years of its life, the Association of Indian Universities has enabled such an inter-change."

---

quest for knowledge, contributing as well as receiving.

It is the modern university system, he said, that has provided us with high-level trained manpower in all the different walks of life and particularly in science and technology, agriculture, engineering, medicine, education and public administration. We are now the third largest nation in the world in terms of our stock of scientific and technical manpower. It is these human resources, qualitative as well as quantitative, that have enabled us to make a break-through like the green revolution in agricul-

ture, to expand the modern sector of our industry, to develop a nation-wide net work of health services, to build one of the largest systems of education in the world, to run a public administration system with the aim of providing extensive welfare services and to manage the largest democracy in the world. The university system has also been our most important instrument for vertical mobility and equalisation of social and economic opportunities. It has trained large numbers of women who are now playing an increasingly important role in public life and in the services.

The Scheduled Caste and Scheduled Tribes are now receiving higher education on an unprecedented scale (the number of post-matriculation scholars from these social groups which was only 655 in 1947-48, is now more than 250,000) and are playing an important part in all spheres of life, and especially in administration and in the legislatures. The university system has also made a significant contribution to nation building and political development. It has also spurred the development of literature in the Indian languages and helped the building up of good and independent press. In short, he added, it would not be an exaggeration to say that many of our achievements in the modern period, and especially since independence, are promoted, to a considerable extent, by the development of the university system during this period.

There has been an unplanned and uncontrolled expansion of institutions of higher education so that their location has not often been properly determined, adequate conditions for affiliation have not been prescribed or enforced, and several institutions which are not academically viable and neither economic nor efficient, have been allowed to come into existence. The few prestigious and quality institutions admit students on some sort of a selective basis. But by and large, a policy of open-door admissions has been followed so that every student who has completed his secondary school and desires to receive higher education is able to get admission in *some* institution and in *some* course. This leads to a dual system in which the core of a small number of quality institutions is accessible only to young persons coming from the privileged sections of the society while all the others (and even most of these come from the top 10-20 per cent of the society) are compelled to join a large periphery of sub-standard institutions. This makes the system very inequitable and uneven, with a few quality institutions at one end and a long tail of sub-standard institutions at the other.

Standards in teaching have declined with a deterioration in the general level of teachers, inadequate provision of facilities and failure to modernise curricula, to adopt dynamic methods of teaching or to carry out the much needed examination reform. The motivation of students have also declined, especially as the distance between the degree and the job has begun to grow. This had led to a substantial increase in the incidents of student unrest; and it has often become difficult even to run

the system efficiently from day-to-day, to say nothing of bringing about the radical reforms we often speak of. In fact, a point has almost been reached when the persistence and increasing magnitude of these and other weaknesses has begun to threaten, not only the future of the university system, but that of the society as a whole. A sustained and vigorous reform of the system of higher education has therefore to be attempted on a basis of the highest priority. This is the challenge which we are now facing; a challenge that we must meet successfully and without delay. This has become particularly difficult because unscrupulous politicians are only too anxious to exploit the academic community for their narrow partisan purposes.

Among the programmes of reform needed, he highlighted only three. First of all, he said, we

**Governor of Maharashtra, Nawab Ali Yavar Jung  
said in a Message :**

"As a former Member of the Inter-University Board of India and of its Standing Committee I am happy, on the occasion of its Golden Jubilee Celebration, to send to the Association of Indian Universities as the Board is now called, my felicitations on the event. I feel I must say on this occasion that either the Board has of late not been given the role which it could usefully have played, which the Committee of Vice-Chancellors plays in England, or has itself not taken upon itself the assumption of such a role. This needs to be rectified and I am sure that the Universities, the Government and the University Grants Commission will stand to gain by it."

have to ensure that the pressure on university admissions is reduced and that the average entrant to the university system would be more mature and better prepared than what he generally is at present. This will necessarily involve the adoption of the uniform pattern of 10+2+3 for the school and college classes which was recommended as early as 1919 by the Calcutta University Commission (and has been subsequently reiterated by several committees and commissions) and make an intensive effort to vocationalise the higher secondary stage and to divert a fair proportion of the students in classes XI and XII in vocational terminal courses which will prepare them for useful careers in life.

Secondly, Prof. Hasan said, we must tackle the problem of numbers. As we all know higher education costs a great deal of money. Within the limitation of our resources, when the need for expanding primary education and spreading literacy is universally felt, it would be suicidal to lose a sense of priority. There has to be a rigorous control at the institutional level and care has to be taken to see that every institution of higher education does maintain the minimum standards prescribed and admits only that number of students for whose education it has adequate facilities. In order that such restriction on full-time institutional instruction should not adversely affect the claims of the less advanced sections of the society, we have to evolve, as re-

commended by the Education Commission appropriate tests of admission which will recognise merit and provide for social justice. In addition, seats will have to be reserved, in all institutions of higher education, for the first generation leaders, for students from rural areas, for women, and for the weaker sections including the scheduled castes and scheduled tribes.

Side by side, programmes of non-formal education, on a part-time or private study basis, have to be expanded to meet the needs of all who desire to have higher education and are duly qualified for it. Thirdly, we must make a determined effort to reform examinations by adopting the semester system and programmes of internal assessment, testing problem solving capacity by including cooperative projects, to be supplemented, where necessary, by external examinations. Emphasising this aspect of the reform, he said, unless we make a major effort to overhaul the existing examination system which began giving negative returns some years ago and has now become highly counter-productive, it will not be possible to carry out any major reform of qualitative improvement such as revision of curricula, improvement of teaching and learning materials, or adoption of improved and dynamic methods of teaching.

Making the last point, Prof. Hasan said, expression 'development' is often understood only in a capitalist and imperialist sense, viz., the creation of a society which is highly industrialised, based on mass production of goods and services,

and oriented to unlimited consumption. Such societies developed in the past in a few countries only by depriving the bulk of humans of its due share in the resources of the world. The inequalities to which this system has led, have created tensions and led to an armaments race and stock piling of nuclear weapons which threaten the very existence of human life on earth. In addition, the depletion of non-renewable resources and increasing pollution have also given additional evidence about the non-viability of these systems. It has therefore become urgent to re-interpret the concept of 'development': it should imply, not an unlimited exploitation but a proper management and conservation of natural resources; not mass production for personal profit but production by the masses for their essential needs; not consumer-orientation but a real concern for quality of life of the masses: and not an emphasis on things, but on men.

Let us keep before ourselves the system of value judgement Gandhiji taught us, let us not overlook the fact that we, as a nation, are pledged to move towards the goals of socialism, democracy and secularism. We are determined to achieve self-reliance for the nation as well as for the individual. This is a responsibility, cast not only on the political and economic system, but also on the university system which has to provide the intellectual infra-structure for this revolution. The university system in India, as in other countries of the world, he pointed out, is facing this great challenge; and it is to enable us to meet it successfully that we have to prepare ourselves.

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## AIU's Annual Meeting

(Continued from page 3)

the Indira Kala Sangeet Vishwavidyalaya, Khairagarh, the North-Eastern Hill University, Shillong and the All-India Institute of Medical Sciences, New Delhi.

The provisional membership of 12 universities which came up for review has been further extended for a period of three years with a view to enabling the universities to implement the suggestions of the visiting committees of the Association which visited those universities.

The Association resolved to recommend to the universities a proposal of the Guru Nanak University that a student debarred by one university should not be permitted to join another university during the period for which the student was debarred. In this connection the universities that did not have the suitable provision in the rules and regulations would be requested to frame the necessary rules.

Considering that the UPSC had large areas of functions in which the universities could actively

collaborate, the proposal of the UPSC for closer co-operation between the educational institutions and the Public Service Commissions was welcomed.

The Association also considered the replies received from the various universities on the terms of reference of the Review Committee appointed to go over the working of the University Grants Commission. While the matter was discussed suitable recommendations would be worked out by the Standing Committee for onward transmission to the Review Committee.

The Association permitted the employed students from this year to participate in the University Sports on an experimental basis.

The next annual meeting of the Association would be held at the Sri Venkateswara University, Tirupati, during February-March, 1976.

Shri I.J. Patel, Vice-Chancellor, Gujarat University who took over as the President of this Association on 17th January, 1975 was elected to continue in office till 30th June, 1976.

# Key-note Address of Malcolm S. Adiseshiah

## Maladies of Higher Education

THE Golden Jubilee Celebrations of the Association of Indian Universities might well begin with a stock taking, of what our universities have achieved in over a century and a half of their existence and in the half a century of the functioning of the Association, as well as with some reflections on our future perspectives.

**Achievements:** The achievements of our universities and institutions of higher education are impressive. From their founding days in the mid nineteenth century, they provided the leadership for the country—as legislators, jurists, civil servants, educators, freedom fighters, planners, entrepreneurs and critical gadflies against all forms of bureaucracy, power abuse and concentration and resultant corruption. Among our political leaders, we recall those who founded and ran university institutions—Raja Ram Mohan Roy, Ashutosh and Shyamaprasad Mukherjee, Pandit Madan Mohan Malaviya, Mahatma Gandhi, Zahir Husain, C. R. Reddy, Radhakrishnan, among our cultural leaders whose names are associated with the foundation of universities, Rabindranath Tagore, Rukmini Devi, Ramakrishna, Aurobindo and Syed Ahmed and among jurists and men of affairs, C. D. Deshmukh, A. Ramaswamy, Lakshmanaswamy, Gajendragadkar, Kale, Gadgil, C. P. Ramaswamy, Annamalai, Hansa Mehta, Avinasilangam, G. Ramachandran and a whole host of men and women to whom at this moment we should pay reverential tribute.

Our universities have been effective centres for the contributions to and transmission of knowledge from one generation to the next. In some areas of knowledge, it has been an act of conservation as in the case of our classics, Sanskrit, Arabic, Persian and Tamil. Some have involved intensive research into past events and trends as in the case of our country's history and the histories of its great cultural regions. Others have involved a renaissance as in the case of our fourteen national languages and the flowering of their literature and poetry—starting with Bengali and Tamil and moving on to Hindi, Telugu, Urdu, Punjabi and Gujarati etc, and resurgence of our major art forms of dance, drama and music. Again in the pure sciences of physics, chemistry, botany and mathematics, as well as the social & human sciences the universities have played a significant part in pushing back the frontiers of knowledge, of dwelling long and arduously in the twilight zone between the known and unknown,

## The role of Indian Universities

and in transmitting faithfully both received and new knowledge. I merely recall the names of Ramanujam, Raman, Jagdish Chandra Bose, Birbal Sahni, Mahalanobis, Nilakanta Sastri, Varadachari, Annadurai, Azad, Kabir as the start of an unending honour roll of knowledge contributors and disseminators.

### RAPID EXPANSION OF KNOWLEDGE

Our Universities and institutions of higher education have diversified themselves in response to the knowledge explosion that has been taking place and the social demands that they have faced. The rapid expansion of knowledge has meant that these institutions can no longer carry out their original synthesising, encyclopaedic mandate, which the term 'universitas' conveyed, they had to become more and more specialised institutions. They could no longer turn out gentlemen who knew a little about everything under the sun, the classics, philosophy, history, logic, the natural social and human sciences: they had to turn out men and women who knew more and more about less and less. But that less had tremendous social significance and was an urgent response to national development. And so our university level institutions today include Vidyapeeths and rural universities, Indian institutes of technologies and Indian institute of management, Agricultural universities and rural industrial polytechnics, Administrative and national staff colleges and technical and general teachers training colleges, institutes of development studies, demographic, urbanisation and community development centres, the emerging autonomous colleges, and a growing plethora of post secondary institutions.

Our universities have also responded, perhaps more quickly and more daringly than the other levels of education, to the exploding demand for higher education of our people. On the eve of independence we had 3.5 lakhs enrolled in our institutions of higher education: today we have 35 lakhs enrolled in these institutions. This amazing quantitative expansion over a period of two and half decades was a response to three forces. Foremost was the response to the revolution of rising expectations which free India generated in all its sons and daughters. This was the tryst with destiny that its millions had been eagerly awaiting, and they incorporated that hope in the constitutional right to

education. Second was the population bulge which Independent India ushered in. As a consequence, the country has one of the highest populations in the world of university age boys and girls aged 18-22 at nine per cent, which bulge is pressing on our university portals with irresistible force. Third is the democratization of education, a wind blowing through all countries and this country, wherein those to whom the doors of higher education have been closed in the past, our scheduled castes, our backward classes, our frontier and hill areas people, in fact our poor who, in terms of the minimum needs norm constitute 70 per cent of our people, are beginning to enter our universities, as first generation learners.

Finally I must refer to the moral contribution which our universities have made to our country, to its people and to the world. This moral contribution is seen in the universality of its vocation, which is the pursuit of truth: in the hallmark of its members, which is objectivity and commitment: in the methodology of its life, which is discussion and dialogue; and in the capacity of its corpus to identify error and give and take praise and blame. It is this spiritual nature of the university which provides the commonality of minds, the binding adhesive, of university men and women whenever and wherever they meet together, overriding their real differences in language, culture and rich local traditions which mark our country, and the differing and different national, economic and social systems which characterise our world. This deep moral outpouring of the university into our society is because it is the abode of youth, youth which we have been reminded, is not a time of life but a state of mind, a temper of the will, a quality of imagination, a building of character, as Gandhiji was never tired of reminding us, demanding a predominance of courage over timidity, of the appetite for unending human adventure over the sloth and ease of age, leading on to that memorable epitaph to Youth: "Some men see things as they are and say, why. I dream things that never were and, say, why not."

Such is the lasting and precious heritage of our universities. Let us guard it and transmit it to our children and children's children.

### STOCK TAKING

Our stock taking must also make us see where we have failed as universities, and in a sense this part of the stock taking is decisive with regard to our future perspective.

Our universities and institutions of higher education today are in deep trouble. Apart from a few isolated and declining islands of intellectual and spiritual sanity, the outward expression of this trouble is to be seen in the daily round of strikes, gheraos, mass copying, walk-outs, burning of libraries, laboratories and university property, arson, stabbing and murders and violent confrontation with the police, transport workers, restaurant and

shopkeepers in university towns and cities. The monthly Bulletin of my Institute keeps a record of unrest in our educational institutions and the resulting monthly chart is dimaying. It has led on two occasions in the last two years to proposals in the highest policy making educational body of the country, the Central Advisory Board of Education, for the closing of all universities for a year, inducing the teachers and students into rural and agricultural development work, as our neighbour, China, did during its cultural revolution, and using the pause for a complete restructuration of the system of higher education. The causes for this malaise of our universities represent the setbacks in the system. They are, I believe, well known and in our more honest moments generally accepted.

There are first the exogenous causes. Our society is in the process of mutation and change and this is reflected in the university. One of the end purpose of education is employment. But as long as the economy growing is at the rate of 3 to 3.5 per cent per annum—and this has been the secular trend over the last two and half decades since we began planning as an independent nation—while higher education graduation has been growing at five times that rate at 15 per cent, the social end product of education is not employment but unemployment. A second exogenous factor is the unequal and inequitable society in which the university is functioning. As long as 40 per cent of our people are living below the nutritional poverty line, and 70 per cent below the minimum needs line, so long as 42 per cent of the country's national income accrues to a minority of 20 per cent of our people, and 44 per cent of landed and industrial property is in the hands of 4 per cent of our society, the university will continue to reflect this class bias. 80 per cent of its survivors still come from the top 20 per cent of society and large rural areas have no higher education facility. Delhi has 136 students per 1000 people, while Orissa has 2.2. A third exogenous factor is the volatile political profile of the country, with political parties using the staff and students in our universities to serve their non academic purposes, with all the attendant consequences of power, nepotism, corruption and intellectual and ethical discord reigning over the academic community. Today the elections to university staff associations and university and college student unions are no longer based on the unwritten contract between the academia, they have all the pomp, paraphernalia and prestige of State Assembly and Lok Sabha elections—and in some cases invested with even greater noise and significance.

The trouble in our universities and higher educational institutions is also due to endogenous causes. The massive quantitative expansion of our universities has not been accompanied by the necessary reordering of the functioning of the institutions together with some provision for additional staff, buildings, laboratories, libraries and sports facilities. Higher education is no longer the 1 : 1 relationship, the interpersonal confrontation and mutual communication which all

education is. It is in most cases a mass monologue system, and in many of our affiliated colleges a poor third rate, run down pseudo commercial mill. We have laid down for ourselves in the report of the Education Commission that the optimum student enrolment in a colleges should be 1500, and yet only 15 per cent of our over 3000 colleges conform to this guideline.

The resulting continuous decline in standards is all pervading. It runs through teaching techniques, learning methodologies, the quality of textbooks, in the type and content of our examination question papers and the marking of the answers, providing the inducement to cheating and circumventing the various evaluation systems that they represent. In this depressing situation, again with a few notable exceptions, the course content of what is taught and what is learnt has little relation to the academic and intellectual demands of any system of higher education and the national and development needs of our society. Our higher education products are not only unemployed, they are in a large measure unemployable, as is seen in the use of the 1973 Rs. 100 crores Union government allocation for the employment of the 5 lakh unemployed graduates. I estimate on the basis of experience in my State and reports from others that 60 per cent of this allocation has had to be used to de-school the graduates and retrain them with socially employable skills.

### WASTAGE AND STAGNATION

I am not sure that the problem that we face in higher education is essentially lack to limitation of financial resources. Before we can talk of financial constraints, we should first ask ourselves how optimally we are using our existing large resources. From this point of view, our first task is to stop the current rates of wastage and stagnation in these institutions. The University Grants Commission estimates that the failure rate at the first degree level is 50 per cent: that 70 per cent of postgraduate students in arts and commerce and 40 per cent in postgraduate science courses are placed in the third division, which is the near equivalent to failure. This declining quality in our postgraduate education is serious, because that is the feeder to the teaching corps of our universities and higher education institutions, and the future health of these institutions.

Such are some of the external and internal maladies of our system of higher education—maladies which call for a basic restructuration both of society and the entire educational system, of which higher education is a part, along lines that have been laid down by the accepted report of the Education Commission and the guidelines set forth in our Draft Fifth Plan. For this we need the political will to act and to act quickly. Time is not on our side, because the demands on our system of higher education are daily mounting and its cup of crisis is running over.

I now turn to deal with some of these demands.

**Development:** The first demand that we face is that of development.

Development is holistic—It is individual and social, it is political, economic, cultural and moral, it is rural and urban, it is local, national, regional and international. It is multifaceted and myriad phased and one of our problems is that the boundary lines of our university disciplines do not coincide with or correspond to any facet of development. There are no economic problems, no sociological problems, no more than there are chemical or physical problems of development. We have problems of poverty, unemployment, water scarcity, food grains production and procurement, trade imbalance, regional backwardness, energy shortage and misuse, social discrimination, individual and class exploitation. These are the problems of development. Development so conceived calls for its diagnostic, policy formulation and programme execution, the combined skills of all our natural, human and social science as disciplines, going beyond multi-disciplinarity towards inter-disciplinarity. The nurturing of multidisciplinary studies and inter-disciplinary cells is one of the urgent calls that development is making on our universities. Ultimately it will mean replacing the existing natural, human and social sciences disciplines by new specialisms which correspond to our real life.

Underdevelopment is historic. The massive heritage of poverty, hunger undernourishment and malnutrition, the feeble agricultural industry and poor, non-existent manufactures, with an undeveloped and maldeveloped infrastructure of communication, health, education, energy, water use and availability, rigid and out worn but exploitative social institutions and organisations with which the country's development programme started its independence must be kept to the fore in all planning for development. The development starting point is this englobing underdevelopment which was built up gradually but relentlessly over the past 3 centuries. I have a feeling that not enough attention has been paid to this historic heritage of underdevelopment, which in part accounts for the unrealism and irrealism of our development plans. Here there is a call for the universities to trace and track in as precise a manner as possible the contours of our underdevelopment by sector, by region, by locality, by class and by group, so that a firm basis for development programming can emerge.

Development and underdevelopment are humanistic. They of course involve measurements and models, abstractions and attempted quantifications, and quite liberal use of statistics, which too have been indulging. They call for separate analysis of the great problems facing us, of population, renewable and non-renewable resources, the political framework, social values and socialising institutions, peaceful living and the fight for the rights of the exploited and disinherited. But behind it all is the human person who is the cause and consequence of underdevelopment and the subject and object of all development. It is this human face which keeps peering at all of us involved in promoting development and battling underdevelopment, which is the crucible through which all must pass. In him are all the separate problems, the

awesome models, the confounding statistics united. That is why development and underdevelopment call for rigorous thought and reflection about the theoretical and practical means-strategies and policies, about the specific condition of each group and every person in it—expressed in programmes and projects and about their being synthesised in man—his hopes, his aspirations, his weal and welfare. This kind of rigorous reflection on the condition of our times and the reasons for the welfare or ill fare of our people is the responsibility of the universities, and it is in the discharge of this intellectual effort, that they will, true to their calling as innovators, originators, modifiers and transmitters of ideas, act as the pivot for the contribution to and distribution of cultural forms and directions which is Man's conscience and self expression.

**Strategies :** Development strategies have in the past been identified with a certain rate of growth of the Gross National Product. That was the strategy of the First United Nations Development Decade; that also was our planning strategy until we began talking about growth with social justice. In our draft Fifth Plan, we have gone further and have proposed the transfer of resources from the top decile to the bottom 3 deciles of society, as part of the poverty eradication strategy. The problem here is that, within the existing institutions, this objective of transferring resources from the top to the bottom deciles will either be defeated through inflation, tax evasion, and private profit-maximisation or will become self satisfying rhetoric, acting as a substitute for some hard decisions and action.

It is no use allowing incomes to be earned without limit, and through whatever means to be freely generated, and then expect that their disposition and ownership can be controlled. The strategy for poverty eradication calls for the creation of new institutions and organisations which can ensure an equitable distribution of the generated incomes and wealth. One such new institution is the organisation of landless agricultural labourers who form the major labour force in the country. Another is the organisational development of a new system of rewards and incentives which would replace the hidden hand and the market system which assures to him that hath that more will be given. The savings banks for labourers started in one district the collective ownership of land, tractor and inputs operated in some others are further instances of such small and large efforts. The development strategy for our major objective of removal of poverty is the creation of the kind of new organisations and institutions that spreads to all in the community the fruits of development, rather than the monolithic instrumentality of GNP growth. We do not know what these institutions and organisations should be, how they are to be worked, manned and run and this is a task, in which some pilot work needs to be done, the kind of operational field work for which higher educational institutions are uniquely fitted.

A second development strategy is the emerging concept of gross domestic capital formation, which is

both physical and human. So far, our treatment of capital formation has referred to physical quantities, to stocks of equipment on and with which labour works and to a fund embodied in different forms with property rights attached to them. But a country's gross domestic capital formation must include human capital formation, which is a function of its demographic trend, its infant nutrition, health facilities and survival rate, its education and training system, its scientific and development research, its housing and drinking water provisions. It is not necessary to pursue the fruitless endeavour as to which is more important—the physical inventories or the human capital resources, or to attempt to separate and identify what is the return on each. This can be done if we had an adequate data base and more refined tools than is available under the various benefit-cost analysis systems. What is essential is to work on the cost effectiveness of the various and varying means of gross human capital formation and subsequently of its investment and use. This is a task to which the universities should address themselves, because human capital formation in our country and in the third world generally is the one strategy which faces no constraints except those which are of our own making, to which I have made reference earlier. It is also an insistent call on the universities because they are an essential part of this process and strategy of gross capital formation.

## SCIENCE & TECHNOLOGY PLAN

A third facet of the development strategy is the role of science and technology which till recently was ignored in development planning. It is no accident that it was not until our Fifth Five Year Plan that the first ever Science and Technology Plan was produced and given a place in our development strategy. Till then science and technology was generally ignored by the development planner, because it came under his catch all banner of uncertainty and accident, and/or was used to explain certain limited events, such as agricultural expansion misnamed the green revolution, or the high productivity capital in some, unfortunately in a minority, of our manufacturing enterprises, or a nuclear implosion whose development use is one of our major preoccupations. The Science and Technology Plan that we have produced for the Fifth Plan is the beginning of the realisation that for us technology is no accident. It is one of the new institution which can be used in the battle against underdevelopment and for that quantum jump which development in this country demands. But this institutionalisation of science and technology in the development process means the implantation of science as a native plant in our society, and the considered use of technology, as the means of achieving the breakthroughs which physical and social engineering call for. There is from this point of view one rather large gap in our current conception of the science and technology sub sectoral plan—and that is that it is limited to the physical, natural, engine-

ering and agricultural sciences and technology, leaving an aching void in the conjunctural use of the human, social and behavioural sciences and their technologies. This is one grave lacuna in our institutionalisation of science and technology, which our universities and institutions of higher education can help us fill.

There are two more aspects of development strategy to which I wish to refer. Development strategy is a means of ensuring consistency between the policies and policy instruments which make up a plan and from which programmes and projects flow. This consistency does not mean harmony between policies. The policy of import substitution of 200 MW generators, for instance, might come into conflict with the policy to arrest a production decline in the continuous process industries because they need to import standby generators, in the kind of power famine years that we have been and are passing through. In some areas again, national integration may involve local disintegration, as in the case of powerloom textiles from one state killing off the handloom weaving industry in another state of the Union. Particular policies can be in conflict with each other and it is then necessary to recognise such conflicts and use strategies based on the trade off relations between them that have to be worked out. But for this there should be a policy for each separate objective. No one policy or policy instrument can at the same time secure eradication of poverty, mass production of wage goods, expanding the quantum of exports and improving our terms of trade and balance of payments. And it is the function of strategy to hold together in a consistent national frame these separate and sometimes conflicting policies. Here is an area where more light is needed—the policies required by our development objectives, their conflicts and trade off relations and the resulting strategy alternatives facing the country—an area calling for hard, tiresome and objective study by the university community.

Development strategy must also come to terms with the centralising tendency of all non-socialist development planning and the functional devolution and decentralization programming which the fight against the underdevelopment imposes. Here our neighbour China is working to a strategic model under which policies are established centrally but programmes are planned and executed at the level of each commune, covering not only agricultural production of food and cash crops, but also steel and power generation, and scientific and technical research establishments. In development strategy, the core sectors should be identified. This sector will vary from country to country in accordance with its political and human resource endowments, but will also in all cases include what I have termed earlier gross domestic capital formation. But the programming of this core sector and its execution should be the responsibility of the local functional units in a vast country like ours. Work needs to be done in our higher education establishments on identifying the core sector in devising decentralised programming

methods and execution techniques for pushing forward development and pushing back underdevelopment at the critical local points.

**Our Perspective:** On this basis is it possible to look into India in the 80's and 90's?

On the demographic front, we would be very near the point of having a second India living with us, that is a second 500 million men, women and children, most of whom are already born, inhabiting this vast land. One question that arises is what kind of heritage would we of the first India leave for the second India in the political, economic, social, cultural and moral realms and how can we improve this heritage in the short time that is available to us? On this rather serious question, which is not really an essay in futurology, but a form of reflecting over the state of our coming generations, not much thinking is being done in the country in our universities.

## INSTITUTIONS & ORGANISATIONS

On the economic front, unless we develop the kind of institutions and organisations that I have referred to earlier, there will continue be mass poverty. With our present institutions—productional and distributional—we will be ending the nineties with somewhere between 25-30 per cent of our people still living below the nutritional and minimum needs poverty line. Given the demographic profile of the country at that time, the absolute numbers of the poor would be large than those living in poverty today. If agriculture, particularly food grains production grow during the 80's and 90's at an annual average increase of 3 to 3.5 per cent, if the production of essential goods, cloth, edible oils, housing materials, energy, sugar increases at around 8 per cent a year, and if a working distribution net work ensures that these essential goods are effectively delivered to the poor majority, then the alleviation of poverty in the country would be possible, through institutions which will regulate factor ownership, diffuse economic power and decision making, operate a new system of rewards and incentives, make impossible wasteful and conspicuous consumption and provide the social and cultural frame work for a life of simplicity and sufficiency. In effect we will be moving towards a period of sufficiency for all, on the basis of an equal sharing of poverty vis-a-vis the affluent economies.

In the political arena one foreign prognosis is that we will lose our democratic structure, will become a military dictatorship and be embroiled in wars with our neighbours. This is a futuristic foreign fantasy, but it conveys a salutary warning to us. We have a very few years in which to develop a literate citizenry, a task to which every socialist country turns as its first priority, and to make our own the democratic values of sharing poverty, living simply and peacefully. There is here an option for us to choose from between democracy and its social, economic and political roots and some form of authoritarianism and its political, economic and cultural

consequences. That choice will also be conditioned by the emerging new structures, of which the new International Economic Order being adumbrated now by the United Nations is one.

This new International Economic Order which, India joining with other third world countries decided last year to usher in, is based on the principles of justice and peace in the relations between India and other nations. The principle of justice involves reducing and ultimately eliminating the yawning and widening economic gap between India and the third world people on the one hand and the affluent people and nations on the other hand. This is not a new demand. India has been making this demand since the founding of the United Nations, which is coterminous with its own independence. The idea is new because it is the first that has been conceived by the third world for the the third world and has been established as an universal responsibility by the community of nations. What gives meaning to this demand in the New International Economic Order is our recognition of the indivisibility of the concept of justice. It must and will apply internationally, that is in the relations between States, because it is being applied intra-nationally, that is in the relations between the classes of our own State. That is its ultimate sanction. The principle of peace in our relations with our near neighbours and the more distant ones is again to be based on a system of completely free and mutually reinforcing cooperation, through building and operating a new system of collective economic security, a form of independence within interdependence, which is the logical extension of the concept and operation of the system of non alignment and developed by us during the fifties and sixties.

In the field of education, there will be a renovation and real expansion in the minimum educational skills which primary education or its equivalent in out-of-school adult education programmes represent. This will then call for diversification of our second level education system-in-school but more heavily out-of-school-and some contraction of the quantitative growth of our higher education and establishments, so that they may develop into the centres of reflection and excellence as outlined earlier. Here again there is the option facing us, which is to set our hands immediately to restructuring and renovating the system or to continue with the present system and its wastes, internal and international. Our internal wastes in the form of propouts and pushouts, the mis and mal education, the unemployed and unemployable are slowly leading to the burning down of the whole system to the point where we may have no option. On the external wastes, we are training the medical personnel needed for some of the the most affluent countries in our world and have contributed our share of

scientific and computer skills for the MIRV missile and moon landing space programmes. On top of all this, we will have to devise a system which can educate twice the number of primary, secondary and university level students within the next 25 years. This cannot be done by simply doubling the number of schools and universities, libraries, laboratories and teachers. We will never have the resources for it nor the physical availabilities. There will have to be a new pattern, a new system, growing out of what is called non formal educational. Let us thus make our options clear and act on them while we still have the time.

### UNIQUE ROLE OF VARSITIES

In making that option, universities have a special and unique role to play. That role begins with putting their own house in order, along lines on which there seems to be general agreement. They will then be part of a system in which their specialised, diversified and irreplaceable talent will be in constant use in the building of a just, peaceful and progressive society. The university system will then enjoy all the institutional and academic autonomy it needs, because through its planning process, it will be fully accountable to society which feeds and nourishes it, it will contribute to the enrichment of the entire educational system of the country and be the guardian and proponent of ordered and organised change which is the life blood of development.

On this basis, the cultural perspectives for the 80's and 90's are exciting. The universities will be leaders in the peaceful flowering and development of the arts—the dance, music, drama, painting and sculpture. These fine arts will be an expression of the spirit of the people, embodying in themselves the principles of truth, beauty and goodness because they are based on the grand affirmations of justice and peace. In such a society there will be no backward and forward classes, no religious ethnic or linguistic majorities and minorities. There will be people—individuals and groups of men, women and children who are the human vision of our future.

**A Call :** It is on this vision of the future of our heritage for the Second India, that I end. That vision calls for our treading now the hard political path of peace and cooperation, the stony economic road of unceasing and ceaseless toil, the soiled social lane of justice and some sacrifice particularly on the part of us the elite, and the dismaying moral route of honesty, integrity, compassion and charity. These paths must be trodden by us in pursuance of our past heritage as university men and women, in face of the call of our people for development and a life without poverty, and in the face of our obligations as devotees to truth. Let us together answer that call. □

# Educational innovation and progress in development

*An expert meeting was organised by Unesco last July to prepare for a conference this year of senior education officials in the 25th countries. This meeting examined areas for reform, some of which are highlighted in this article based on an interview, given by the chairman of the meeting, Mr. Joseph Ki Zerbo of Upper Volta, to Unesco education writer Antony Brock.*

**Q.** The aim of the Unesco meeting was to make proposals which would serve to advance education in the 25 least Developed Countries, of which your own country is one. In your view, do these 25 states have specific problems, particularly in the educational field.

**A.** The list of 25 countries was drawn up on the basis of quantitative criteria, such as the size of gross national product, the percentage of industrialization and the percentage of literates. These are handy criteria, but they do not precisely represent the reality: the 25 do not face problems which are qualitatively different from those of other developing countries and some of the evils which they suffer are found even in developed countries.

The question is rather one of degree. The need to eat is felt everywhere in the world, but felt differently; in very rich countries it is appetite, in others hunger, and in still others, famine.

Even with this distinction, the group is not very homogeneous, one country of the 25 may already have undertaken considerable educational reforms while another may still base its educational development on out-of-date models.

**Q.** Did the experts see the aim of advancing education in these countries as a contribution to their overall development, or was there a suggestion that educational progress would have to wait upon economic advance?

**A.** This is one of the vicious circles affecting life in those countries. We asked ourselves: is education

mediocre, even miserable, in those countries because they are under-developed economically, or are they underdeveloped because of the low level of their education? Personally, I think that these countries are poor because they are ill-educated.

If they could be given suitable educational system that produce producers and not educated jobless or people who want only to be white-collar workers, then their economies would be directly affected. The Unesco experts' meeting was important because it sought to help the 25 to use their educational system as tools for economic development. This is the aim we want to communicate to the coming conference of the 25.

**Q.** Given the mechanism of the United Nations system—the fact that its agencies can only respond to requests by governments, not impose solutions—do you think it possible that international aid can influence changes in the 25?

**A.** There we face a capital problem: the United Nations, by definition, is outside the realm of choice in basic options in education, a matter decided by sovereign states. However, the selection of these 25 countries for privileged assistance should provide a chance for new approaches to the problem.

Too often, I think, aid to developing countries has been subject to conditions, and even bad conditions, especially in the case of bilateral aid. This has been given, not according to the developmental imperatives of the receiving country, but rather according to the imperatives of the donating country. I

wonder if the time has not come to offer aid, subject to new conditions; for if we continue simply to add new investments, new funds to a system which is badly oriented, in 20 years we shall still be where we are today.

The time has come to link aid to innovation. After all, even if international organisations are not free to intervene in the fundamental choices of nations, they are still free to give or not to help to favour this orientation rather than that. They can help the countries concerned, not only by giving, but giving for innovation.

**Q.** Do you think innovation can effect the structure of education or its contents? What means of educational reform exist for these countries.

**A.** Innovation should be considered as an investment, as an addition to capital. It is innovation which gives investments their value. A state receiving aid is often asked to provide a counterpart to aid from the outside: if a state is asked to innovate, this can be regarded as a counterpart and this innovation can lead to more aid.

Innovation means qualitative change as well as changes in structures. Introducing mass media into education can be an innovation because through it the school, instead of being an institution confined within its own walls, can become more open, more responsive to the milieu. The mass media can extend the school, transform the village into a school, create what has been called a "learning society".

There are other, more precise innovations which could be introduced into school; for example, by bringing work into school. Education can be unproductive in two ways: first, because during the school years the children are unproductive, and secondly, because once schooling is over, graduates may remain a charge on society instead of becoming producers. One of the main ideas which the experts suggested be presented to the 25 was to consider education as something achieved by work and to generate work.

## USING LOCAL PRODUCTS

There is, too, the use of African languages for reading and writing and the production of educational materials within the country instead of expensively importing it. These decisions, affecting structure and quality, could be important assets for the progress of the country. All that is needed is to support the decisions with money.

**Q.** The meeting did not seem to consider that just "more money" would solve the problems of the 25 but that the states themselves would have to decide on new paths to follow. In your view, do the innovations of which you have spoken constitute new paths?

**A.** In the last few years, since the majority of these countries became independent, they have shed many illusions such as those held by some people at the Addis Ababa conference in 1961, where they spoke of achieving 100 per cent enrolment and 100 per cent literacy in 20 years. It is now realized that taking account of all the factors of demography and

of structural difficulties on the national level, this rate of development cannot be followed and that present educational practice, far from spurring development, is a drag on it. Many Statesmen in Africa today know this because they see the results with their own eyes. Those who drop out the school or who have fine diplomas but cannot find work often belong to the families of the decision-makers.

Thus conditions are good for the introduction of the idea of revolutionary innovation. The thought of introducing work into school is very unpopular but I think the time is ripe to make presents understand that it is that or nothing. I believe that it should be explained to a family that instead of hoping for the impossible—to get their child a civil service job, which is increasingly difficult—it is better to accustom him to productive work with his hands from the first years of schooling, so that he can find a job himself no matter what level his education ends.

**Q.** I noted in the meeting of experts that although the original Unesco proposal was to hold a conference of ministers of the 25, the idea now is to invite high officials who, presumably, have more liberty. Do you think that this will allow new approaches and provide stimulus for progress in these countries?

**A.** Some of the 25 have already launched revolutionary reforms, Tanzania and Guinea, for example. In such countries, there will be fewer difficulties. The advantage of inviting officials, instead of ministers, is that ministers are bound by their governments' commitments while officials often have more freedom to speak.

The disadvantage is that although officials may reach useful conclusions, these may not be translated into action immediately because the officials are not at the highest decision-making level. But they do have power and the confidence of their ministers and if they have conviction many changes can follow.

In this respect the fact that the group of 25 is not homogeneous is valuable. It is easy to discuss big ideas without practical experience, but it is more useful to listen to an official who can say: 'we have undertaken this innovation, these are the difficulties we met, this is how we overcome them and these are the benefits we drew from them.'

Such experience exists in certain countries and can help to attune approaches so that the 25 present a united front in negotiations. It would be to the advantage of the 25 themselves as a block, even if their basic options are not the same at the national level.

**Q.** To sum up do you believe that realistic planning will make it possible to close the gap which exists between the 25 and the rest of the world?

**A.** If the states accept the idea of innovation as a pre-condition to aid from outside they can achieve substantial results. Bringing the states together will show that by concerted action at their own level, they can solve some of their problems.

# What has happened to the students?

CROWTHER HUNT

IT IS the first speech on higher education outside the House of Lords by the author : The speech came at a time when a lot of comment was on in the Press and on radio and TV of Government cuts in education. Lord Crowther Hunter an expansionist in Higher and Further Education—his own special area of responsibility—took this opportunity after the recent mass demonstration about student grants, to give some indication of his thoughts on this vital matter.

Our new planning figure for the expansion of higher education are—640,000 by 1981. Now—there are 4 points.

First, the Government is still fully committed to the Robbins principle of providing enough places and courses in Higher Education for “all those who are qualified by ability and attainment to pursue them and wish to do so.”

In this context the planning figure of 640,000 is simply the application of that fundamental principle to the latest trends in members and demand. So, then—no change in basic policy. Secondly, the new planning figure of 640,000 by 1981 means expanding present numbers by about one-third over the next half-dozen years—a very considerable expansion by any standards—and a particularly bold programme, therefore, in the light of our immediate economic difficulties. (And as far as planning is concerned, 1981 nearly here—it isn’t some distant point not yet in our practical sights. It is the focus of our attention now.

Thirdly, the new planning figure is actually about 50,000 higher than the Robbins Committee’s own estimate of what would be needed.

And, fourthly, the new planning figure represents a further increase in the proportion of the 18 year old age group entering full-time higher education: an increase by 1981 to about 17 per cent compared with 14 per cent in 1973. These figures—14 per cent in 1973 and about 17 per cent in 1981—can be compared with the figure of less than 3 per cent in 1938. And, of course, many of the age group not in higher education enter other further education—full time or part time. Taking together higher education and further education, full time and part time, more than a third of the 18-20 year old age group are now on a course of further or higher education.

So the Government stands fully committed to the Robbins principle—and the application of that principle to the latest trends in numbers means planning for an increase in places in higher education by about one-third by 1981. Now it is in this context there are two further fundamental points about our expansionist plans.

First, there should be steady progress of expansion year by year. There should be no cut-backs or standstills in numbers at one point followed by a promise of a bigger expansion in a succeeding year. And the R.S.G. settlement to be announced later is consistent with that concept. And this is a point which will need increasing emphasis over the coming months to be seen to get the measure across. So, then—continued steady expansion to the 1981 target. Now, to provide steady expansion to meet a demand rising to an estimated 640,000 by 1981 will involve urgent and rapid activity.

Secondly, as the expansion in higher education continues, there are for consultation of discussion two basic issues about it. The first of these is the balance between the number of places to be provided in the University sector on the one hand and the non-University sector on the other. Now—the starting point here is the 1972 White Paper which envisaged that the number of places in higher education would be split 50/50 between the University and the non-University sectors of higher education.

It might well be the right sort of split to the aiming at if we’ve got our projection of student demand right. But the point is whether or not we should be seeking positively to influence student demand as between these two sectors of higher education...and to be influencing it over the years in the direction of what will best serve the national interest? This seems to be a particularly pertinent question at a time when not only are we committed to expansion in higher education—but expansion at a time when our financial and economic resources are going to be stretched to their uttermost. When—because of the gravity of the economic and financial problems we face, any expansion in the area of public expenditure has to be justified to the hilt—it is more than ever crucial that this expanding expenditure in higher education should be channelled into that area or areas of higher education, which will best serve the country’s interest. So the question whether the national interest will best be served by *not* seeking to influence the direction of student demand—or by positively seeking to influence the direction of such demand in some way or other.

And the second point here is to look at this problem in a slightly different way and in a wider context. One of the major problems is to find money not only for the continued expansion in higher education—but money for further education, too, for those who left school at the age of 15 or 16.

Now, clearly, this country simply cannot afford *not* to develop the abundant skills and capacities of all our people. That compared with many other

countries we waste too much of our national talent by not providing adequate—or the right—educational opportunities for these talents to be developed to the full. Now—in this general area of further and higher education—and given the severe financial constraints within which we inevitably have to operate—should we be giving priority to allocating funds to further education for those who left school at 15 or 16—or should we be giving priority to one or other of the sectors of higher education for those continuing in full-time education beyond the compulsory school-leaving age? These, of course, are not easy questions there are those who say “don’t let’s try to establish any priorities in these areas at all” because if we do we’ll get it wrong. So let’s leave it to the ‘free-for-all’ of supply and demand.

Now the fundamental and no doubt controversial point is whether or not we should seek to discover where—in terms of the national interest—our priorities in further and higher education should lie. And if we can establish this—should we not seek to influence student demand accordingly—in the longer term and by a wide variety of means? And, of course, inevitably involved in such a discussion and decision is what is the basic justification in the long term for having two sectors of higher education anyway? And of course, this latter question will inevitably be raised anyway from a rather different point of view—from the point of view of devolution. With the Government White Paper on directly elected Assemblies for Scotland and Wales—Assemblies which will have real devolved powers—and with the Government’s consideration of possible devolution to the English regions—the place and organisation of further and higher education in any of these plans will obviously be a matter for serious thought and concern.

But this isn’t a talk about devolution—the theme is priorities in our expansionist plans for further and higher education and whether we should seek to influence the direction and indeed the extent of student demand.

Now as we all know, the present system of student awards for first degree and comparable courses is largely based on the recommendations of the independent Anderson Committee which reported on student grants in 1960. The Committee gave its name to the principle that the grant should enable a student to complete his course without hardship. The rates of grant for the current academic year were calculated on the basis of the percentage changes in the student cost of living over the period September 1970 to August 1973, measured by a joint Education Departments/NUS Working group, with adjustments to take account of economic costs in

halls of residence and the cumulative effect which accelerating inflation from the late 1960s on has had on the real value of the grant. The current grants represent an average increase of approximately 40 per cent over rates of grant at the beginning of the last triennium in 1971/72, and of approximately 25 per cent over last years rates. These figures compare with an increase in the Retail Price Index over the three year review period of 28½ per cent (and an increase in the Index of Average Earnings of 43 per cent). In the context, therefore, and bearing in mind the background of the serious national economic difficulties they were generous. And they were intended to maintain the Anderson principle that the grant should enable a student to complete his course without hardship.

As far as higher national diplomas are concerned the change recognises the essential part which the HND plays in the further education system and the high esteem which it has won among industry and other employers. The Bill will also provide for the introduction of an awards scheme administered by the Department for mature students at the long-term residential colleges.

So, then—progress is being made in the area of grants and awards. But—back now to the point about a number of anomalies and hardships in the present student grant system. And here we would move towards a “fairer system of student grants”. Equally, of course, the financial restraints under which we must inevitably operate mean that there is unlikely to be any extra share of resources that can be made available.

It would be wrong to raise false hopes—or even any hopes of any major improvements. There will be some changes in the present system which will emerge from the review. Any such changes will be effective from the beginning of the next academic year. The right to peaceful demonstrations in support of views and opinions strongly held and which is not appear to be getting the situation they deserve—the emphasis should be on the word *peaceful*. Violence and militancy will simply not help the cause we are all trying to promote. Indeed, they simply make it much harder at this most difficult time for both central Government and local authorities to win support for getting the resources we need for the cause we are all so determined to promote. And the main aspect of that is the Government’s commitment to continuing and steady expansion in further and higher education so that the talents of *all* our people can be developed to the full—not only in the interests of all of us as individuals—but also in the interests of the country and the community as a whole.

# **CONVOCATION**

## **Gauhati University honours Rashtrapati**

A SPECIAL Convocation and the XIV Convocation of the Gauhati University were held on 3 Feb. 1975 at the Birinchi Kumar Barua Auditorium-Cum-Lecture Theatre in the University campus. At the special Convocation the degree of Doctor of Laws (*honoris causa*) was conferred upon Rashtrapati Fakhruddin Ali Ahmed.

Presenting Rashtrapati Ahmed to the Chancellor for conferment of the degree the Vice-Chancellor Dr. H. K. Baruah referred to "his deep understanding, quality of judgement, sense of secularity and above all his ardent patriotism" which have "earned him the love and respect of his countrymen."

"It is in the fitness of things" the Vice-Chancellor said, "that the University should confer the Degree of Doctors of Laws (*honoris causa*) on this great son of India in recognition of his high statesmanship and his outstanding services to the Nation."

### **Rashtrapati's Address**

The XIV Convocation was held for conferring degrees to the students who had passed the various degree examinations in 1973 and some examinations of 1972. While the Governor of Assam Sri L.P. Singh presided over both the Convocations Rashtrapati Ali Ahmed delivered the Convocation address as the Chief Guest.

Addressing the graduates the Rashtrapati stressed the necessity to "define and design a model and a strategy of development that ensure for our people a quality of life in conformity with our long cherished traditions and the compulsions of modernisations" and he defined this quality of life as "dimension of living beyond merely physical and material needs, but not exceeding at the same time the essentials of well being without which fullness of the inner life is hard to attain... The quality of life is comprised of values rather than wealth, of happiness and harmony instead of quantitative increases in national incomes and Gross National Product."

He expected "all the Universities and places of learning in India to nurture such individuals who will broaden the life and horizons of the society" and according to him "the right type of education can afford both satisfaction and power beyond the achievements and comforts provided by technological advances and accumulation of wealth."

In order that the quality of life as desired by him be ushered in, the Rashtrapati stated that "the first step in this direction is a closer relationship between the University and the larger community which it must serve".

"There are many things" the Chief Guest said "that need to be done... I shall mention only three... Firstly, the University should provide facilities for extension work with the community

for social service and welfare programmes... Secondly, our University should contribute to the building of greater unity of harmony in society by participating actively in the reducing of tensions and conflicts... Thirdly I suggest that Universities should play a more significant role in the process of transforming education."

The impact of modern science and technology on our cultural patterns occupied his mind. The spread of Cultural influences from one part of the world to another leads to a cultural fusion which tends to make the world a single-culture place a dull place to live in. On the other hand, if we stress cultural isolation, cultures become sterile and stagnant. "The problem how to resolve this dichotomy must exercise our minds", he said.

The Rashtrapati concluded with a note that the G.U. should play a vital role in promoting physical fitness and disciplined conduct in our youths.

The Chancellor L.P. Singh referred to the various qualities of head and heart of Rashtrapati Shri Ahmed, who "immersed himself in a resolute and fearless fight for the freedom of the country, regardless of the suffering and deprivations it brought him. He upheld steadfastly the cause of secular nationalism in a period when the minds of many wavered, and when the protagonists of the two-nation theory worked successfully to bring about a partition of the country."

# *Round Up*

## A World Plan

### Science and Technology Developments

ABOUT 90 per cent of all scientists who ever lived are now alive, and of them some 90 per cent work in the world's developed countries. Those who work in developing countries get only 2 per cent of the approximately \$ (U.S.) 50 billion spent yearly on scientific research and technological development.

The implications of this for global development, according to a United Nations study, are evident considering the correlation of a country's share of the world's gross national product (GNP) to the number of research workers it keeps active. The United States has some 35 per cent of the world's active scientists, the Soviet Union about 13 per cent, the United Kingdom 6 per cent and India 1 per cent. Their respective shares of global GNP are in roughly the same proportion.

This wide scientific gap is one of the fundamental causes of global economic disparities. The problems of the developing world get little attention from the scientific community. The money and talent are concentrated on the problems of the rich, further increasing their lead.

To deal with this situation the United Nations adopted in 1971 a World Plan of Action on the Application of Science and Technology to Development. Prepared over a six-year period by the United Nation Advisory Committee on the Application of Science at Technology for Deve-

lopment (ACAST), with the assistance of the United Nations Specialized Agencies, and a group of about 150 experts from many countries the World Plan identifies major problem areas and suggests remedial action. It indicates the directions for planning and co-operation in the future.

At the global level its main purpose is catalytic—to stimulate scientific, technological and financial co-operation between developed and developing countries, and serve as a guide to the most effective action by governments and international institutions. The Plan has been elaborated into more comprehensive regional plans by the ACAST Regional Group assisted by the Economic Commission for Africa, Asia, Latin America and West Asia, and the United Nations Specialized Agencies.

The main responsibility for implementation remains, however, with national governments. Thus the Plan continually stresses the need to build up national scientific and technological capacities in developing countries and appeals to political leaders to make use of this capacity.

The World Plan consists of two parts. The first and shorter section lists priority areas in which the application of science and technology would have a resounding impact. This part was prepared entirely by ACAST.

The second part consists of a wider and more detailed range of proposals based on material submitted by individuals and organizations within and outside the United Nations system. Both sections deal with the need for new knowledge, for priority application of already existing knowledge, and for institutional structure. Though recommendations under all these heads relate directly to science and technology, the need for accompanying economic and social research, the priorities in the Plan touch on food production, health, housing, education, industrial production and the use of natural resources.

### Seminar on System's Theory

INAUGURATING the 11-day course on 'System's theory and its application to agricultural engineering'. Dr N K. Anant Rao, Deputy Director General (Education) at Indian Council of Agricultural Research, said that scientists should identify the problems being confronted by the farmers, using appropriate system, tools and evolve suitable methods to overcome the same. Twenty-five delegates from 12 institutions from all over the country and abroad are participating in the seminar. System approach represents an effort to take an overall view of a set of objects or procedures which are united by same form of interaction or inter-dependence.

Dr M. S. Randhawa, Vice-Chancellor, Punjab Agricultural University in his presidential remarks said that the crop this year would be very good and "I am cheered and happy to see that there would be a bumper harvest and even sarson oilseed crop was promising". The Vice-Chancellor was hopeful that within the coming two to three

years, India would be in a position to tide over the current oil crisis because of promises held forth at Bombay High. Dr. Randhawa said it was foolish to say that the Green Revolution was a failure. He chided at those who advocate intermediate technology for developing countries. He felt that if the type of specialized technology adopted by Punjabi farmers was also taken up by the farmers of the

rest of the country, India would be in a position to solve many of its current problems. Referring to the employment aspect of agricultural engineering students, the Vice-Chancellor said the agro-service centres were proving a useful outlet for them. He appreciated the co-operation extended by the scientists of the engineering college to the manufacturers of farm implements.

of cattle. "At a pinch, we could take 100 more" explained a representative of the Sadvichar Parivar. Artificial insemination arrangements were also made at the camp, whenever needed.

The Parivar has made arrangements for the supply of fodder from Navsari and Jalgaon in Maharashtra.

It is proposed to collect about Rs 2.5 lakhs for the project and put it on a permanent footing. Most of the money would come from the Mahavir Trust and Rotary and allied organisations.

## Gujarat University Campus The Drive-in-Theatre

DESPITE the drought, the grass is still green in and around the Gujarat University campus.

Thanks to the efforts of the Sadvichar Parivar and the Rotary organisations, alfalfa, wheat, maize and jowar, are being grown in about 80 acres of Gujarat University land which had been lying waste all these years.

Arrangements are made to take care of 282 cows, bullocks and buffaloes from drought-stricken areas. These will be returned to their farmer-owners after the onset of the monsoon this year.

The faculties of Zoology and Botany of Gujarat University had made detailed studies of the energy cycle of cattle.

Green patches greet the eye at several places in the campus. The largest stretch of farm land lies behind the university staff quarters from where one can see the distant Drive-in-theatre.

Two tube-wells with a capacity of 40,000 gallons of water daily irrigate the 30 to 35 acres of alfalfa, ten acres of wheat, five acres of jowar and about 20 acres of maize. The sowing preparations were inaugurated by the Governor, Mr. K.K. Viswanathan, on November 18.

The Vice-Chancellor, Mr. Ishwarbhai Patel explained the project to reporters : "The university felt that it should do something to alleviate the sufferings of the drought-hit people. We offered the land free to anyone who would undertake sowing operations and also start a cattle camp."

The Sadvichar Parivar, at the helm of the farming operations, cleared the land of unwanted growth and laid two pipelines for the supply of water at a cost of Rs 30,000.

The cattle started to arrive from the Bhal regions, Dholka, Dandhuka, Bhavnagar, Surendranagar and Kutch. By January 14, 1975, camp had been set up with lots of shade, a water trough and plenty of grass and fodder.

Mr. Patel recollects: "The animals were mostly skin and bones when they arrived. Many of them had fallen down three or four times before they reached the camp."

Today, they looked healthy. They are being fed daily on ten kg of alfalfa, three kg of hay, two kg of cattle feed and one kg of concentrates.

The camp is designed to accommodate about 400 heads

## Vice-Rector of U.N. University

PROFESSOR Ichiro Kato, former President of the University of Tokyo and former Chairman of the Association of Japanese National Universities, was recently appointed Vice-Rector and General Counsel of the newly established United Nations University, beginning 1st April. The appointment was announced in New York in preparation to opening the University's headquarters in Tokyo this fall.

Dr. James M. Hester, the Rector of the University, is in the process of forming a cabinet of outstanding scholars for the future guidance of the University. "They are to point the University on its global task of conceiving and administering research and training programmes that will help further the high purposes of the United Nations Charter," Dr. Hester said.

Professor Kato will be in charge of the administrative and legal affairs of the University. He will be one of the initial five Vice-Rectors in a cabinet that will draw from the most eminent scholars in all parts of the globe. They are charged with the most central concerns of the United Nations University, a world-wide network of institutes that eventually will stretch into every continent through its own and affiliated institutions.

# CLASSIFIED ADVERTISEMENTS

## SAMBALPUR UNIVERSITY JYOTI VIHAR: BURLA.

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(2) Teaching/Research experience will be regarded as additional qualifications.

The post carries usual dearness allowance as would be sanctioned by the University from time to time.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 2/- (Rupees two) only. Candidates intending to receive forms by post are required to send (a) Crossed postal order of Rs. 2/- payable to the Finance Officer, Sambalpur University, Jyoti Vihar, Burla (b) a Self addressed envelope (23 cm x 10 cm) with postage stamps worth Rs. 2/- affixed to it with the words 'APPLICATION FORM FOR TEACHING POST IN SAMBALPUR UNIVERSITY' superscribed on it. Money order, cheque will not be entertained.

The last date of receipt of applications in the office of the University at University Campus, Jyoti Vihar, Burla, Sambalpur (Orissa) is 20.4.75. The candidates will be required to appear for an interview before a Selection Committee at their own expenses.

All communications should be addressed to the Registrar by designation only.

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lly qualified and experienced candidate.

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Incomplete applications in any respect will not be entertained for consideration.

M.O. or cheque will not be accepted towards application fee. Candidates called for interview will be paid Second Class Railway fare both ways by the shortest route. No other expenses will be paid. The last date for receipt of application is 21st April, 1975.

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Qualifications Essential: (1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India. (2) M.D. (Tuberculosis), M.D./M.R.C.P. in Medicine with T.D., D.T.D. or D.T.C.D. (3) Teaching/Research experience as Associate Professor/Reader in Tuberculosis for five years in a recognised Medical College or Institute. Desirable: Research publication in the standard journals.

Professor of Skin & V.D.—(One).

Qualifications Essential: (1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India. (2) M.D. (Dermatology & Venereology), M.D. (Medicine) with D.V.D., (3) Teaching/Research experience as Associate Professor/Reader in Venereology and Dermatology for five years in a recognised Medical College/Institute. Desirable: Research publication in standard journals.

3. Reader in Epidemiology—(One).

Qualifications Essential: (1) M.B.B.S. or equivalent qualification recognised by the M.C.I., (2) M.D. (P.S.M.)/Community Medicine, Speciality Board of

Social & Preventive Medicine (U.S.A.)/or P.H. or M.R.C.P. with Social Medicine or M.D. Medicine with D.P.H. (3) About 3 years teaching and research experience in Epidemiology in a public Health Institute or well organised P.S.M. Department of a Medical College or Training in Epidemiology. Desirable:

(1) Research publications in Epidemiology. (2) Experience of Clinical Epidemiological work. (3) Diploma in Public Health or Clinical Discipline.

4. Reader in Anaesthesia (One) (Temporary likely to be made permanent.)

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5. Reader in Basic Principles—(One).

Qualifications Essential: (1) A.M.S./A.B.M.S. or an equivalent basic qualification in Indian Medicine recognised by the University (2) D.Ay.M. (Basic Principles or equivalent Post-graduate qualification or Ph.D. in Basic Principles. (3) About three years teaching and research experience in the subject in any recognised Institution in the capacity of Lecturer or equivalent post. Desirable: (1) Original contribution and research publication in Basic Principles. (2) Qualification in modern Science and Medicine.

6. Lecturer in Physiology (One) Qualifications Essential. (1) M.B.B.S. Degree or an equivalent qualification recognised by the Medical Council of India. (2) Postgraduate Research Degree in Physiology i.e. M.D., M.Sc. Ph.D., D.Sc. or M.R.C.P. with Physiology as a special subject or equivalent qualification. (3) About 2 years teaching experience as Demonstrator in Physiology in a Medical College or any other Institution. Desirable: (1) Research publications in the subject.

7. Lecturer in Forensic Medicine—(One).

Qualifications Essential: (1) M.B.B.S. Degree or an equivalent qualification recognised by the Medical Council of India. (2) M.D. (Forensic Medicine, M.D. (Pathology, M.D. (Med.) with Diploma in Forensic Medicine, M.R.C.P. with Forensic Medicine as a special subject, speciality Board of Path. (U.S.A.) or an equivalent qualification. (3) About two years teaching experience in the Department of Forensic Medicine of a recognised Medical College/Medical Teaching Institute. Desirable: (1) Research experience and publications in the subject.

### **8. Lecturer in Microbiology—(One).**

**Qualifications Essential:** (1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India with M.D./M.Sc./D.Phil./D.Sc. in Microbiology, and about two years teaching experience as Demonstrator/Tutor. OR Non-medical graduates with Ph.D. or D.Sc. in Medical Microbiology & about two years teaching experience in a recognised Medical Institute (after requisite Postgraduate qualifications). **Desirable:** Research experience in the field.

### **FACULTIES OF SCIENCE AND HUMANITIES**

**Professor** ... Grade: Rs. 1500-60-1800-100-2000-125/2-2500.

**Reader** ... Grade: Rs. 1200-50-1300-60-1900.

**Lecturer** — Grade: Rs. 700-40-1100-50-1600

### **9. Professor of History (One).**

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard. (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. (3) About ten years experience of Post-Doctoral research and/or of teaching at a University or a College. (4) Ability to guide research of a high standard.

### **10. Reader in Physics—(Two).**

### **11. Reader in Botany—(One).**

### **12. Reader in Agronomy—(One).**

**Qualifications (Essential):** (1) A Doctor's Degree or published work of an equally high standard. (2) consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. (3) About five years experience of Post-Doctoral research and/or teaching in a University or College. (4) Experience of guiding research. (5) Specialisation in Soil Fertility/Soil Water and Crop-plant relations/Land resources development/Crop production and weed control (for post No. 12 — Reader in Agronomy only). **Desirable:** (1) Specialisation in Ecology (for post No. 11 — Reader in Botany only), (2) Experience of planning and coordinating research and teaching programmes and managing research, teaching, demonstration and seed production farms (for post No. 12 — Reader in Agronomy only).

### **13. Lecturer in Physics—(Two).**

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University.

(Kindly also refer to Note 1 and 2 as given below).

### **14. Research Assistant (Dept. of Zoology).**

**Salary:** Rs. 500 (fixed).

**Qualifications Essential:** (1) Atleast Second class M.Sc. Degree in Zoology

with cytogenetics, Genetics special paper. **Desirable:** (1) Three years research experience with publications or Ph.D. with publications.

(Those who have applied in response to our previous Advt. No. 20/73-74 need not apply again).

### **INSTITUTE OF TECHNOLOGY**

**Lecturer** — Grade: Rs. 700-40-1100-50-1600.

### **15. Lecturer in Engineering Mathematics—(Two).**

### **16. Lecturer in Mathematics—(One).**

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. **Desirable:** (1) Specialisation in one of the following fields: (i) Modern Algebra, (ii) Operations Research, (iii) Differential Geometry and Tensor calculus, (iv) Numerical Method, (v) Functional Analysis.

(Kindly also refer to Note 1 and 2 as given below).

### **MAHILA MAHAVIDYALAYA**

(other things being equal preference will be given to women candidates)

**Lecturer** — Grade: Rs. 700-40-1100-50-1600.

### **17. Lecturer in Zoology—(Two).**

### **18. Lecturer in Chemistry—(One)**

### **19. Lecturer in Chemistry—(Physical) (One).**

### **20. Lecturer in Sociology — (One).**

**Qualifications Essential:** (1) Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. **Desirable:** (1) Ability to teach both through English and Hindi medium. (2) Willingness to accept the hostel duties and residence in the Girl's Hostel and charge of co-curricular activities. (3) Experience of Hostel work & extra curricular activities. (4) Specialisation in any one of the following fields: (i) Genetics, (ii) Cytology, (iii) Physiology, (iv) Embryology. (for post No. 17 — Lecturer in Zoology only).

(Kindly also refer to Note 1 and 2 as given below).

### **OTHER INSTITUTIONS**

### **21. Deputy Librarian (Central Library)**

**Grade:** Rs. 700-50-1250 (likely to be revised).

**Qualifications Essential:** (1) A first or second class H.A./B.Sc./B. Com. Degree with first or second class M. Lib. Science (Two years course) OR A first or second class M.A./M.Sc./M.Com. Degree with first or second class B. Lib. Science or Diploma in Library Science. (2) About 7 years experience of working in a responsible professional capacity in a large Library. (3) Research experience with publications. **Desirable:** (1) Good academic career. (2) Knowledge of Documentation and Bibliographic work. (3) Working knowledge of one or more foreign languages.

mentation and Bibliographic work. (3) Working knowledge of one or more foreign languages.

### **22. Teacher in Bengali — (One) (Central Hindu Boy's School).**

**Grade :** Rs. 400-30-640-40-800.

**Qualifications Essential:** (1) A second class Master's Degree of an equivalent qualification in the subject. (2) University Degree or Diploma in teaching (equivalent to Degree). (3) Adequate experience of teaching the subject in School /Higher Secondary class. **Desirable:** (1) Ability to teach both through the medium of Hindi and English, (2) Good at extra curricular activities, N.C.C., Sports.

**Note:** The teacher appointed will be required to teach any class in the School.

### **23. Assistant Teacher in Hindi (Trained Graduate Scale—(One). (Central Hindu Boy's School).**

**Grade:** Rs. 250-20-450-EB-25-550 (likely to be revised).

**Qualifications Essential:** (1) Atleast second class Bachelor's Degree with Hindi as one of the optional subject. (2) University Degree/Diploma in teaching. **Desirable :** (1) Adequate experience of teaching the subject in a College/Secondary classes. (2) Post-graduate Degree in the subject. (3) Good at extra curricular activities, N.C.C. Sports and Games. (Those who have applied in response to our earlier Advt. No. 14/74-75 need not apply again).

### **24. Teacher in Primary School (One) (Central Hindu Girl's School).**

**Grade:** Rs. 165-10-215-15-275-EB-15-350 (likely to be revised).

**Qualifications Essential:** (1) Higher Secondary Trained atleast second class. **Desirable:** (1) Trained Graduate second class. (2) Capable of teaching all the subjects upto Vth class. (3) Good at extra-curricular activities.

(Candidates should apply on plain paper with full details alongwith an I.P.O. for Re 1/- towards application fee. No. T.A. is admissible for this post).

**NOTES:** Applicable for the posts of Lecturers at Item Nos. 13, 15, 16, 17, 18, 19 and 20 only under the Faculty of Science, Institute of Technology and Mahila Mahavidyalaya.

1. Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications as given as essential qualification No. 2.

2. Provided further that if a candidate possessing a Doctor's Degree or equivalent published work is not available or is not considered suitable, a person possessing a consistently good academic record (due weight being given to M.Phil. or equivalent degree or research work of quality) may be appointed on the condition that he will have to obtain a Doctor's Degree or given evidence of published work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments, until he fulfills these requirements.

## THE UNIVERSITY OF KASHMIR, SRINAGAR

### Notice

Applications to reach the undersigned on the prescribed forms by April 20, 1975 are invited for the following posts:—

#### Post & Grade

1. Professor in History—Rs. 1100-50-1300-60-1600.
2. Readers in History, Mathematics, Physics and Political Science—Rs. 700-50-1250.
3. Senior Fellow in Kashmiri—Rs. 700-50-1250.
4. Lecturers in Zoology, Education and English—Rs. 400-40-800-EB-50-950.

Prescribed application forms can be had from this office on a written request accompanied by (I) Crossed Postal Order for Rs. 6/- (cashable at the Srinagar Post Office) in favour of Registrar, University of Kashmir, Srinagar, and (II) curriculum vitae.

(M.A. Chishti)  
**REGISTRAR.**

No: F.10/Adv-Posts/Adm.  
The University Campus,  
Hazratbal, Srinagar-6,  
March 20, 1975.

## INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY POWAI, BOMBAY 400076

### Advertisement No. 804

Admission to Postgraduate Programme in Engineering and Science (1975-76 Session)

Applications are invited for admission to various Postgraduate programmes leading to the following degrees:

(1) DOCTOR OF PHILOSOPHY Ph. D.) in the various departments of (Engineering, Science and Humanities and Social Sciences).

(2) MASTER OF TECHNOLOGY (M.TECH.) (two-year) in Aeronautical, Chemical, Civil, Electrical including Electronics, Mechanical and Metallurgical Engineering. After admission, a student may opt for the available fields of specialization or a general degree in an Engineering discipline.

(3) POSTGRADUATE DIPLOMA (DIIT) (one-year) in Advanced Aerial (Photo Interpretation, Aero Engine Design, Applied Hydrology, Computer Science, and Dock and Harbour Engineering. Whereas these programmes are meant largely for candidates sponsored from industry, govt. and quasi government educational organizations, other candidates may also be considered in special circumstances.

(4) MASTER OF SCIENCE (M.Sc.) in Chemistry, Physics and Mathematics (two-year), and Applied Geology (three-year).

Following a comprehensive review of the various postgraduate programmes, a considerable amount of flexibility including options for interdisciplinary studies has been introduced. The details will be supplied along with the application form.

### Minimum Qualifications for Admission

#### Ph.D.

#### Engineering

A good second class (or equivalent grade) M.Tech./M.E./M.Sc. (Engg.) degree OR a first class B.Tech./B.E./B.Sc. (Engg.)/ M.Sc. degree in the appropriate or allied branch of engineering or science.

#### Science and Humanities

A good second class (or equivalent grade) M.Sc./M.A. degree OR a first class B.Tech./B.E./B.Sc. (Engg.) degree in the appropriate or allied branch of science or engineering or humanities.

#### M.TECH.

A Bachelor's degree [(B.Tech./B.E./B.Sc. (Engg.)) with 55% marks or equivalent grade in an appropriate or allied branch of engineering. In particular some electives in the following departments are open to graduates from other disciplines:

Aeronautical Engg.: Civil, Electrical, Mechanical.

Civil Engg.: Aeronautical Mechanical.

Mechanical Engg.: Aeronautical Metallurgical.

Metallurgical Engg. Chemical, Mechanical.

Candidates with a Master's degree in Physics with Wireless/Electronics/Radio Physics are also considered for admission to some of the electives in Electrical Engineering provided they have at least 60% marks at the qualifying examination.

#### D.I.I.T.

A good Second Class (or equivalent grade) B.Tech./B.Sc. (Engg.)/M.Sc. degree as indicated below:—

#### Advanced Aerial Photo Interpretation

Civil Engg. (or M.Sc. in Applied Geology).

#### Aero Engine Design

Basic degree in engineering or M.Sc. degree in an appropriate field.

#### Applied Hydrology

Civil Engg. (or M.Sc. in Physics, Chemistry, Mathematics, Geology/ Applied Geology, Geophysics, Meteorology, Agriculture).

#### Computer Science

Electrical, Electronics, Communication, Telecommunication (or M.Sc. in Physics with Electronics, or any other B.E./M.Sc. with sufficient background in Electronics and Mathematics).

Dock & Harbour Engg.: Civil Engg.

#### M. Sc.

A Bachelor's degree in Science or Mathematics with at least 55 % marks at the qualifying examination as indicated below:

#### Applied Geology:

Geology (Main) and Chemistry/Mathematics/Physics (Subsidiary).

### Chemistry

Chemistry (Main) and Physics (Subsidiary) OR Physics (Main) and Chemistry (Subsidiary) OR Chemistry, Mathematics & Physics.

### Mathematics

Mathematics (Main) and Physics (Subsidiary) OR Chemistry, Mathematics & Physics.

### Physics

Physics (Main) and Mathematics (Subsidiary); OR Mathematics (Main) and Physics (Subsidiary); OR Chemistry, Mathematics & Physics.

**CANDIDATES WHO HAVE APPEARED FOR THE CORRESPONDING QUALIFYING EXAMINATION AND ARE AWAITING RESULTS ARE ALSO ELIGIBLE TO APPLY.**

**CANDIDATES BELONGING TO SCHEDULED CASTES/SCHEDULED TRIBES WILL BE CONSIDERED FOR ADMISSION PROVIDED THEY HAVE OBTAINED AT LEAST 50 PER CENT MARKS (OR EQUIVALENT GRADE) IN THE QUALIFYING EXAMINATION THEY ARE ALSO EXEMPTED FROM TUITION FEES.**

Candidates for admission to the M.Tech., DIIT & M.Sc. programmes will have to appear for a written test and interview at IIT in the third week of July 1975, at their own expense.

Candidates called for interview (in the third week of July) for research scholarship for Ph.D. Programme will be paid a single Second Class fare by the shortest route from the place of residence to the Institute and back.

### SCHOLARSHIPS

The Institute provides scholarships to all non-sponsored candidates admitted to postgraduate programmes (except those admitted to M.Sc. programmes, for whom the number of scholarships is 25% of the number of students admitted).

A few Postdoctoral Scholarships are also available.

### Information Brochure and Application Forms

These can be had from the Deputy Registrar (Academic) by enclosing self-addressed stamped (50 paise) envelope of size 28x20 cm and superscribed "ADMISSION TO Ph.D./M.Tech./DIIT/ M.Sc." as the case may be.

Last date of supply of application by post—6th June 1975.

Last date of receipt of completed applications—13th June 1975.

Postal requests for application forms received without a self-addressed, adequately stamped and duly superscribed envelope of the appropriate size or received after 6-6-1975 will not be entertained.

Completed application forms with crossed Indian Postal Order for Rs. 5.00 payable to IIT Bombay, must reach the Deputy Registrar (Academic) on or before the 13th June 1975.

**PANJAB UNIVERSITY CHANDIGARH**

(Advertisement No. 2/75)

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, by 21-4-1975 along with postal orders for Rs. 7.50 for posts at Serial Numbers 1 to 12 and Rs. 5.00 for posts at Serial Numbers 13 to 16.

**Posts & Pay Scales**

1. Professor of Theoretical Physics	Rs. 1100-50-1300-60-1600 plus allowances.	1
2. Professor of Inorganic Chemistry (Temporary).		1
3. Readers in Inorganic Chemistry (Temporary).		2
4. Reader in Economics	Rs. 700-50-1250 plus allowances.	1
5. Reader in Pharmacology		1
6. Reader in Punjabi (Temporary)		1
7. Lecturer in Zoology		2
8. Lecturer in Physical Chemistry	Rs. 400-40-800-50-950 plus allowances.	1
9. Lecturer in Statistics		1
10. Lecturer in German		1
11. Demonstrator-cum-Programmer (Dept. of Economics).	Rs. 350-20-450-25-600	1
12. Research Fellows:	Rs. 350/- p.m. (fixed)	2
Deptt. of Statistics-I		
Deptt. of Guru Nanak Sikh Studies-I	Rs. 400/- p.m. (fixed).	
13. Teaching Assistants:	Rs. 300-15-420-20-500 plus allowances.	4
Chemistry Organic Section-I		
Statistics-1		
Microbiology-2		
14. Research Scholars:	Rs. 300/- p.m. (fixed)	15
Political Science-1, History-2, Hindi-1, Punjabi-1, Microbiology-3, Biophysics-1, Zoology-1, Education-1, Sanskrit-2, Statistics-1, Philosophy-1 and Sanskrit-1 at V.V.B.I.S. & I.S. Hoshiarpur.		
15. Photomicrographers Botany & Zoology	Rs. 225-15-360-20-500 plus allowances.	2
16. Museum Assistant/Taxidermist Deptt. of Zoology.	Rs. 145-7-180-12-300-15-420 plus allowances.	1

**Qualifications:**

1. Professor of Theoretical Physics/In-Organic Chemistry:

(i) A first or second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject, with bright academic record.

(ii) Either a research degree of doctoral standard or published research work of high standard in journals of repute.

(iii) About ten years' experience of research or teaching post-graduate classes at University or College level.

2. Readers in Inorganic Chemistry/Economic/Pharmacology/Punjabi.

**ESSENTIAL**

(i) A first or second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the relevant subject with bright academic record.

(ii) Either a research degree of doctoral standard or published research work of a high standard in journals of repute.

(iii) About five years' experience of teaching post-graduate classes at University or a College level.

**DESIRABLE**

(in case of Readers in Inorganic Chemistry)

(1) Experience of using modern techniques for research in Inorganic Chemistry.

(ii) Experience of guiding research both at post-graduate and post-doctoral level.

(in case of Reader in Punjabi)

Candidates having specialised work or study in Punjabi Fiction and/or Drama.

3. Lecturers in Zoology/Physical Chemistry

**ESSENTIAL**

A first or second class Master's degree of an Indian University or an equivalent qualification of a foreign University.

**DESIRABLE**

(i) Either a research degree or published research work of a good standard.

(ii) Teaching experience at a University level.

4. Lecturer in Statistics

**ESSENTIAL**

At least a second class M.A./M.Sc. in Statistics or an Indian University or M.A./M.Sc. Mathematics with Ph.D. in Mathematical Statistics or an equivalent qualification of a foreign University. Candidates with Research and/or teaching experience will be preferred.

5. Lecturer in German

At least second class Master's degree in German or equivalent qualifications of

a recognised University or second class Master's degree in any subject with 1st class Advanced Diploma in German. Preference will be given to the candidates with experience of teaching German language and have stayed in the country where it is spoken.

**6. Demonstrator-cum-Programmer**

**ESSENTIAL:**

Second class M.A. or M.Sc. degree in Mathematics with training in Numerical Analysis, System Programming and Advanced Statistics.

**DESIRABLE**

One year's experience of applied Socio-economics research involving FORT-RAN Programming for the I.B.M. Computer 1620. Experience in S.P.S. and Machine Language Programming will be considered an additional qualification.

7. Research Fellows (Departments of Statistics & Guru Nanak Sikh Studies)

First or high second class Master's degree in the subject concerned with aptitude for research. Knowledge of Persian/Urdu/Hindi is desirable in case of Research Fellow in Guru Nanak Sikh Studies.

8. Teaching Assistants (Depts. of Chemistry, Microbiology, Statistics)

First or second class Master's degree in the subject with bright academic record. Experience of research is desirable.

9. Research Scholars

First or high second class Master's degree in the subject concerned with aptitude for research.

10. Photomicrographers (Depts. of Zoology & Botany)

At least Matriculation with considerable experience in Photomicrography preferably in Biological Sciences.

11. Museum Assistant/Taxidermist (Dept. of Zoology)

At least Matriculation. The candidates should be proficient in the preparation of Skeleton; dressing and stuffing of animals, mounting, display of the skeletons and stuffed animals preservation and care of the animals in a museum. Other things being equal, candidates with high qualifications and/or with a Diploma in Taxidermy will be given preference. Knowledge of typewriting will be considered as an additional qualification.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Serving employees may, however, send their applications on the prescribed proforma direct to the University. They may route another copy through their employers. They will be allowed to present themselves for interview on the production of a 'No Objection Certificate'. Convassing in any form will disqualify a candidate.

Application form can be obtained from the office of the Finance & Development Officer, Panjab University, Chandigarh by making a written request accompanying with self-addressed stamped envelope of 23 x 10 cms.



## The many faces of love and care.

You fly to go places. But flying means a lot more. It means going in style, in comfort and going with the right people.

That's where the face comes in—the face you look upon for love and care. The face that speaks your language, serves your food, belongs to your culture as much as you do. The face that understands you so completely. The face of our hostess.

There's something indefinable about her. Something you may not understand, but feel; something you may not demand, but need; something you may not praise, but be secretly grateful for. Like the times when she serves you a perfect Indian meal, or gives you an extra pillow, a second cup of tea, a perfumed towel, plays with the children or lights your

cigarette. Our hostess makes you feel loved and cared for like no other airline can.

Next time you fly, remember Air-India—your country's airline. We know what it means to be an Indian, what it takes to make an Indian smile.



ALGUMA

# University News

CHRONICLE OF HIGHER EDUCATION & RESEARCH

## Glimpses of Golden Jubilee Celebrations

May 1975

Re. 1.25



Shri Fakhruddin Ali Ahmed, President of India, leaving after he inaugurated the AIU Golden Jubilee Celebrations at IIT, New Delhi.

## CLASSIFIED ADVERTISEMENTS

INDIAN INSTITUTE OF  
TECHNOLOGY, BOMBAY  
INDUSTRIAL DESIGN CENTRE  
POWAI, BOMBAY-400 076.  
Advertisement No. 805

ADMISSION TO POSTGRADUATE  
DIPLOMA PROGRAMME (D.I.T.)  
IN INDUSTRIAL DESIGN—1975-76  
SESSION COMMENCING FROM  
JULY-1975.

APPLICATIONS in the prescribed forms are invited for admission to the above programme. The programme is of fifteen months' duration and the candidates will be required to stay in the Institute's hostels.

Entrance requirements :—A degree in Engineering or Architecture with aptitude for art.

Admission is restricted to 10 candidates only. Scholarship of Rs. 400/- p.m. is payable to all unsponsored candidates admitted to this programme.

Applications form can be had from the Deputy Registrar (Academic), Indian Institute of Technology, Powai, Bombay-400 076, by enclosing a self-addressed stamped (40 paise) envelope of size 28 x 20 cms and superscribed 'Admission to Industrial Design'. Completed application with I.P.O. of Rs. 5/- must reach the Deputy Registrar (Academic) of the Institute by 13th June 1975.

THE MAHARAJA SAYAJIRAO  
UNIVERSITY OF BARODA  
Notification No. 1

APPLICATIONS in the prescribed form are invited for the following posts in the Faculty of Technology and Engineering, Baroda.

1. Professor of Applied Mechanics
2. Professor of Textile Engineering
3. Reader in Mechanical Engineering

Scale :

Professor : Rs. 1100-50-1300-60-1600  
Reader : Rs. 700-50-1250

Prescribed application form with details of qualifications and experience will be available from Registrar on payment of Crossed Indian Postal Order of Re. 1-00 only.

The application form alongwith the Crossed Indian Postal Order of Rs. 7-50 should reach the Registrar on or before 31st May, 1975.

Candidates, if called for interview, will have to come at their own expenses.

K.A. Amin  
REGISTRAR

UNIVERSITY OF JAMMU  
NOTICE

APPLICATIONS on prescribed forms are invited for the following posts to reach the undersigned on or before May 31st, 1975 :—

1. Senior Fellow in Dogri (One post) (Rs. 700-1250).

2. Reader in Chemistry (One post) (Rs. 700-1250).
3. Lecturers in Law (Three Posts) (Rs. 400-950).

For full details and prescribed application forms please apply by sending a self addressed envelope of 11" x 5" size bearing postage stamps of worth Rs. 1.50 paise along with a crossed postal order for Re. 1/- drawn in favour of the Registrar, University of Jammu, Jammu (Tawi)-180001, cashable at Jammu post office.

K.K. Gupta  
REGISTRAR

PUNJABRAO KRISHI  
VIDYAPEETH,  
P.O. KRISHINAGAR, AKOLA.  
(MAHARASHTRA STATE)

ADVERTISEMENT NO. BBK/0175(I)

APPLICATIONS in prescribed form are invited on or before 31-5-1975 for the post of Professor of Horticulture in the pay scale of Rs. 1100-50-1300-60-1600/-.

### 2. QUALIFICATIONS :

Essential

(A) (i) Bachelor's degree in Agriculture of this University or of any other University/Institute recognised as such by this University as equivalent thereto.

AND

(ii) Master's degree in Agriculture (in Horticulture) of this University or a degree or diploma of any other University/Institute recognised as such by this University as equivalent thereto.

AND

(iii) At least five years' experience of teaching and/or research and/or extension education after post graduation in the field of Horticulture as evidenced by published results in scientific journals of repute and an outstanding record of service.

AND

(iv) In addition, at least five years experience after post-graduation, of guiding, supervision, organisation and co-ordination of teaching, and/or research and/or extension education in a responsible capacity in a College, Institute, Research Station and/or Organisation.

OR

(B) (i) Bachelor's degree in Agriculture of this University or of any other University/Institute recognised as such by this University as equivalent thereto;

AND

(ii) Master's degree in Agriculture (in Horticulture) of this University or a degree or diploma of any other University/Institute recognised as such by this University as equivalent thereto;

AND

(iii) Doctorate in any of the branches basic to Agriculture,

AND

(iv) At least five year's experience after doctorate, of guiding, super-

vision, organisation and co-ordination of teaching and/or research and/or extension education in a College, Institution, Research Station and/or Organisation.

Desirable :

(i) Doctorate in any of the branches basic to Agriculture.

(ii) Experience of Post Graduate teaching.

(iii) Familiarity with the modern concepts of organisation and co-ordination of teaching research and extension education activities in Agriculture.

3. Application Forms can be obtained from the Assistant Registrar (Establishment) Punjabrao Krishi-Vidyapeeth, P.O. Krishinagar, Akola Dist. Akola, Maharashtra on payment of an amount of Rs. Two (Rs. 2/-) as an application Form Fee. Requests for a form be made separately and should be accompanied by a self-addressed envelope of the size of at least 23 cms x 10 cms bearing postage stamps worth 45 paise. Applications in the prescribed forms complete in all respects together with an amount of Rupees Eight (Rs. 8/-) as registration fee should reach the Registrar, Punjabrao Krishi Vidyapeeth, P.O. Krishinagar, District Akola, Maharashtra on or before the 31-5-1975. Applications from abroad, complete in all respects and in the prescribed form together with an amount of Rupees Eight or an amount equivalent thereto in foreign currency as registration fee should reach the Registrar of this University on or before 16-6-1975. Payment of all fees must necessarily be made through crossed Indian Postal Order payable to the Comptroller Punjabrao Krishi Vidyapeeth, P.O. Krishinagar, Akola (Maharashtra). Incomplete applications and those received after the prescribed date shall not be considered and no correspondence thereon will be entertained.

4. Candidates already in service of Central/State Govt. or any organisation and those in the service of this University should necessarily apply through proper channel forwarding an advance copy to the undersigned; the advance copy should reach him on or before the aforesaid prescribed date.

5. If considered necessary by the University the candidates shall have to appear for personal interview in this University's office at Akola at the candidate's own cost. In the event of a large number of applications being received in response to this advertisement, to avoid inconvenience to all concerned, at the discretion of the Vice-Chancellor, those candidates with superior academic qualifications may only be invited for interview even though others not invited for interview might be satisfying the prescribed minimum qualifications.

KRISHINAGAR, S.P. Kokate  
Akola, REGISTRAR  
Dated : 17th April, 1975

# UNIVERSITY NEWS

Vol. XIII ★ MAY  
No. 5 1975

*A Monthly Chronicle of Higher Education*

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

*Editor : ANJNI KUMAR*

## AIU Golden Jubilee **President Ahmed's inaugural address**

Inaugurating the Golden Jubilee Celebrations of the Association of Indian Universities, Shri Fakhruddin Ali Ahmed, President of India, said : Fifty years is a long period in the history of any organisation and you may look back with satisfaction on your achievements during this period. I am happy to know that two of my distinguished predecessors, Dr. Radhakrishnan and Dr. Zakir Hussain, were intimately associated with your work. On this happy occasion, I convey my felicitations to the President and members of the Association of Indian Universities and wish the organisation greater success in the years to come.

This is no doubt an occasion for rejoicing but it is also an occasion for calm reflection about the role of universities in our national life. I would like to take this opportunity to share with you a few thoughts on this important subject. I believe we have some of the largest universities in the world in terms of the number of students studying in them. But I am not sure if this is a distinction to feel proud about. There is no absolute rule with regard to the size of a university. It can be as small as a few hundred students. The only yardstick that one can reasonably apply is to say that the size of the university should be functional. It should not be so small as to give a feeling of isolation to those who are studying or teaching there. Nor should it be so large that those connected with it do not feel that they belong to a community, the academic community.

In our situation we have permitted some of our universities to grow so large in size that, I am sorry to say, not each one of them is fully functional. They cannot successfully carry out their most important basic function, namely, instruction and assessment. Assessment is necessary partly for reasons of certification but also to ensure that instruction is being imparted successfully. While the job of imparting instruction is done in the classrooms and laboratories and is, on the whole, being handled satisfactorily, in regard to assessment there are some problems. The number of students required to be handled for assessment runs into hundreds of thousands. This is what is making the functioning of universities difficult. According to our system of assessment which has evolved over the decades, large numbers are unsuitable for the kind of examinations we hold. I would suggest that the larger universities should organise their affairs in such a manner that without creating a new plethora of universities, which perhaps the country cannot afford in its present economic situation, they might create units or sub-units or councils or campuses, so that such one of them becomes more functional.

*(Continued on page 9)*

## Agricultural Varsities

# Role in agricultural & rural development

DR. M. S. SWAMINATHAN

**AGRICULTURAL** Universities have a well-defined mission, since they aim to conduct research and impart training of a kind which will lead to the strengthening of the ecological, educational and social infrastructure essential for higher as well as sustained productivity of land and water. Relevance and excellence should be the twin yardsticks of academic and research programmes, with learning by doing as the major educational instrument. The course-credit system imparts sufficient flexibility for helping the student to overcome the handicaps that may arise from his or her earlier educational background or from being a first generation learner and to equip him/her to fulfil aspirations for the future.

In 1971, the age composition of our population structure was as follows:

42% under the age of 15, 55% in the age group 15-64 and 3% 65 or older. People in the 15 to 64 age group are those predominantly contributing to the agriculture of today, while those under 15 comprising 42% of the total population will influence the agriculture of tomorrow. Another important factor in agricultural transformation is the training and education of women. Women play a leading role in many agricultural operations and in certain areas like hilly regions, they are in charge of much of the agricultural operations. They also handle most of the post-harvest operations in the villages. Nevertheless, neither the enrolment of women in Agricultural Universities nor the courses in Home Science colleges reflect the pivotal position of women's education in rural development. According to data cited in the report of the committee on the Status of Women in India, the enrolment of women in Agriculture and Veterinary Science at the University level was as follows :

Agricultural Universities will thus have to take note of their obligations in the education of the rural youth and women, if they are to achieve their avowed purpose of transforming the rural economy through changes in forming systems based on sound principles of ecology and economics.

I shall first deal with research policies and priorities and then give my views on adapting the educational system to the purpose of generating the requisite degrees of relevance and self-confidence in the students.

### TAILORING RESEARCH POLICIES TO MACH DEVELOPMENTAL GOALS

The major goals of agricultural and rural development are: (a) improvement in per capita food availability and nutrition; (b) increased income and purchasing power particularly among those living in absolute poverty; (c) greater opportunities for gainful employment and (d) increased export earnings from both traditional and non-traditional items. Research policies will naturally have to be tailored to achieve these goals of more food, more jobs, more income and more export earnings.

In our country, more and more food will have to be produced in the future from less and less land. In other words, the pathway of agricultural advance chosen has to be by and large productivity improvement. Where water is available and temperature conditions permit, production per unit area can also be improved through an increased intensity of cropping, i.e., through multiple cropping. *Stability of production is as important as improving total production.* This would imply increased attention to extending irrigation facilities wherever possible and to improved methods of water harvesting and utilisation in rainfed areas.

	1950-51			1970-71		
	Total	No. of women	Percentage of women	Total	No. of women	Percentage of women
Agriculture	4744	8	0.17	43,352	169	0.4
Veterinary Science	1100	5	0.45	6,222	44	0.7

In general, the aim should be to maximise the ecological strengths of a region for agricultural production and minimise or eliminate the ecological handicaps.

Historically, increased income has accrued to people in developed countries through a gradual withdrawal of labour from routine operations of farming and their deployment in more industrial pursuits. Industrial growth in Europe and North America has, however, been based on the technology of *mass production* and hence has become over the years increasingly labour displacing, heavily demanding of non-renewable sources of energy and often ecologically harmful. This mode of development is hence not relevant to our country where the population density in most regions is high and employment opportunities are poor. Under such circumstances, the diversification of labour use and linking the farm and factory in a symbiotic manner will have to be done through techniques based on the concept of *production by masses*. The technology of production by masses should not mean wastefully *labour extensive practices* (almost equivalent to doles) but should involve *productively labour intensive techniques*, since only an improvement in per capita productivity will lead to an enhancement in real income.

Above all, even if production and productivity go up, is it possible to ensure that the economic conditions of the poorer sections of the rural community improve? Research policies obviously may not at first sight appear to have any relationship with this broader social goal of growth with distributive justice. However, the question must still be asked both while developing and releasing new technology whether the technology has in-built seeds of discrimination with regard to its relevance to small and marginal farmers. If the technology is established to be neutral with regard to the size of the farm holdings, agricultural economists and social scientists have still the obligation to point out clearly the packages of services (such as supply of seeds, fertiliser, credit, knowledge) and of public policies (such as pricing, marketing, insurance and land reform) which are essential for all farmers, irrespective of their economic status, to benefit from the technological package.

To summarise, research policies in our Agricultural Universities should by and large lay stress on aspects such as the following:

- (a) improvement in the productivity of crops and farm animals without detriment to the long term production potential of the agro-ecological region served by the University;
- (b) developing productively labour intensive technologies which can help to optimise the benefits from critical limiting factors such as land and water, diversify labour use and promote the growth of rural agro-industrial complexes;

- (c) ensuring that the technology is neutral in relation to the feasibility of its adoption by farmers with different sizes of farm holdings;
- (d) prescribing the packages of services and public policies needed to enable farmers from taking to the technological package;
- (e) ensuring that a nutritional dimension is added to agricultural growth both through appropriate crop-planning and post-harvest technology; and
- (f) strengthening the ecological infrastructure necessary for sustained agricultural advance and generating the necessary social infrastructure for group or community action in appropriate areas.

### RESEARCH PHILOSOPHY

Having said that what we need urgently is a low cost, low risk, labour intensive and ecologically beneficial technology, the question arises as to how research policies can be geared to meet this goal. Compounding the difficulties faced in the past is the new awareness that any technology based on an increasing consumption of non-renewable sources of energy will ultimately be self-defeating. This has led to renewed emphasis on recycling techniques. Recycling is only a modern jargon for an old way of life based on the conservation of all natural resources, avoidance of waste and the adoption of compatible aquatic and terrestrial production systems. Fortunately, in any country the predominant forms of energy are still what are classified as "non-commercial" sources of energy. In the light of this trend, it would be useful to ask and answer some basic questions concerning the relevance of the high yield technology developed during the nineteen sixties in the present day context.

### RESEARCH PRIORITIES

(a) **High-yielding Varieties:** High-yielding varieties of wheat and rice are capable of giving high yield not only because they respond to the application of fertilizer and water, but also because they have the capacity to partition the total dry matter produced in a manner favourable to man (i. e., they have a better harvest index). Therefore, the relevance of such strains has increased with the increase in the cost of fertilisers as well as the relative shortage in their availability. Research programmes should continue vigorously to breed varieties which are efficient in the utilisation of nutrients and other inputs and at the same time which have resistance to import pests and diseases. In particular, testing in "hot spot" locations for pests and diseases should be intensified.

(b) **Nutrient Supply:** More research should be done on increasing the efficiency of fertilizer use. In tropical soils under monsoon conditions, leaching

losses may be high. Suitable nitrification inhibitors may have to be developed. Also, integrated nutrient supply techniques involving an appropriate combination of organic manures, biological nitrogen fixation and chemical fertilizers will have to be standardised for every major forming system. The conservation and use of all organic wastes as manure would be facilitated by the development of a rural fuel supply policy, particularly for landless peasants and small farmers, who cannot set up their own bio-gas plants. Once some basic knowledge on integrated nutrient supply systems has been developed, whole village operational research projects can be initiated to test the research hypotheses as well as to popularise the new approaches.

(c) **Integrated Pest Control and Management:** Integrated pest control procedures based on admixtures of chemical, biological, genetic, agronomic and other methods of control should be developed and tested in major crops. Some knowledge is already available with regard to major pests of crops like cotton and sugarcane. These can be tested on a larger scale for identifying the operational problems in ensuring their success. A high-yield environment involving dense plant populations and adequate nutrition and water supply is also generally conducive to the growth of pests and pathogens. Hence, plant protection research should receive as much attention as the other aspects of the production system.

(d) **Water Management and Conservation:** Water management research, including the standardisation of water harvesting and economic utilisation procedures under semi-arid and arid conditions should receive the highest priority. Methods of efficient management of watersheds will have to be standardised under different rainfall conditions. All losses including those in the delivery systems, of irrigation projects should be minimised. More research is needed on the construction of simple, low-cost tube wells, such as the bamboo tube well developed by a farmer in Bihar.

(e) **Alternative cropping strategies and crop life saving research:** In order to ensure that a farmer does not suffer a total loss of crops during aberrant weather, alternative cropping strategies and crop life saving techniques need to be standardised for different weather probabilities. Such research strategies will have to be backed up by appropriate reserves of seeds. For example, if it is too late to sow groundnut, sunflower or safflower could be tried. If it is too late for Sorghum, pearl millet could be grown. Runn-off water collection in farm ponds would help in giving a crop life-saving irrigation when the rains fail towards the latter part of the season.

(f) **Post harvest Technology:** The entire area of harvesting, threshing, winnowing, processing and storage needs much more attention. Since these operations are often largely in the hands of rural

women, appropriate training programmes for women should be initiated. Home Science Colleges should also lay great stress on post-harvest technology.

(g) **Agricultural Engineering:** This area of research including the design of more efficient implements has received comparatively less attention in developing countries. Depending on conditions, the stress could be on the more efficient conversion of human and animal energy and removal of drudgery and not on labour displacing technology. Research on sources of energy particularly the use of solar energy, needs to be greatly stepped up, since adequate energy for agriculture is likely to prove a major limiting factor.

(h) **Labour intensive technologies:** The development of hybrid cotton is an excellent example of labour intensive technology, since this involves hand emasculation and pollination of flowers. We should encourage such innovative research, although countries where labour is scarce and wages are high might not have regarded them worthwhile.

(i) **Garden Land Cropping systems:** More research on scientific garden land cropping systems, leading to the identification of co-operating intercrops should be done. For example, coconut, cacao and pineapple have been found to constitute a compatible cropping system in parts of Kerala and Karnataka. More work of this kind in plantation crops and also in forest canopies is needed.

(j) **Animal Production Systems:** Genetic improvement, health care, nutrition and processing and marketing should all receive co-incident attention. Adequate nutrition is a great limiting factor and much research is needed on fodder and forage grasses and legumes and on sylvi-pastoral systems in waste or marginal land. Non-conventional sources of nutrition also need to be tapped.

(k) **Fish production:** Here, research should increasingly lay stress on culture fishers including inland aquaculture and mariculture. Culture and capture fisheries, if properly blended, could increase the income of fishing families and reduce under-employment. Techniques like composite fish culture and the culture of mussels need to be standardised.

The above are just illustrative examples of some of the research priorities which are relevant in today's context. The situation in the agricultural world is always dynamic and a research system should be capable of constantly re-appraising priorities and approaches.

## RESEARCH POLICIES AND SOCIAL GOALS

Economic growth with social justice is now a widely accepted political goal. Can this goal be achieved only through fiscal and legislative measures or is there also scope for research policies

being shaped towards assisting the attainment of this goal? There is obviously a limit to what can be achieved through technology alone without appropriate institutional reform and back-up. This does not mean that a deliberate bias cannot be introduced in technological development, which can promote the betterment of the poorer sections of the rural community. The introduction of such a "social audit" concept in the testing and popularisation of technology would ensure that the technology is appropriate to a particular socio-economic milieu. The Indian Council of Agricultural Research is initiating with the help of our Agricultural Universities and Research Institutes a series of operational research projects designed to introduce new land and water plans in entire villages based on principles of ecology and economics. In these projects, an attempt is being made to select preferentially technological approaches which can result in improving the per capita income of families presently below the poverty line and in enlarging opportunities for gainful employment. Preliminary exercises have indicated that the introduction of such concepts at the planning level may assist in improving the relevance of a research programme to a specific socio-economic and agro-ecological milieu.

A major aim of national research policies should be the preparation of periodic agricultural balance sheets, indicating the major assets and liabilities. Soil is a resource where no depreciation can be allowed. The maintenance of soil and water productivity would require community action and appropriate Government assistance and control. We should in this connection review the impact of legislative measures like the Sri Lanka Agricultural Productivity Law No. 2 of 1972.

### RURAL SERVICE

The problems we have to face and solve if our agriculture is to move forward at the pace which our food and general economy requires have been often stated and discussed. It is also clear that only through education at different levels can knowledge on the new agricultural technology be effectively converted into production results. The educational programme of the Agricultural Universities therefore assumes great importance. I am aware that our Agricultural Universities have been making continuous efforts to improve the effectiveness of their teaching and training programmes. However, in applied fields like agriculture, an intimate contact with field and weather problems and with plants, soil and farm animals is absolutely essential both for practising farming as a profession and for making research contributions of applied value. It is in this connection that I would request the Convention to consider the question of introducing one year of rural service just prior to the final year of the B. Sc. (Ag) or B. V. Sc. or B. Sc. (Fisheries) course. Often it is suggested that any practical training that may be

prescribed should be after the completion of all the other requirements for the award of the degree. I personally do not share this view since I believe that a return to the University after a period of field experience would help to round-off the educational training of the student. Such an opportunity will provide students with an opportunity both to test the value and relevance of the knowledge already gained at the University at the field level and to come back to the Professors with a set of questions which might arise in their minds as a result of practical experience.

It may be asked whether there could be meaningful facilities for acquiring practical experience at the village level. It is necessary that the period of practical service is carefully planned and does not degenerate into a mere procedural requirement. Fortunately, there are various projects such as the Operational Research Projects and Krishi Vigyan Kendras to be operated by our Agricultural Universities, the Work Experience Project in schools proposed by the Education Departments and various development projects such as the drought-prone areas programme, tribal area development programme, small and marginal farmer development programmes and others where the student can work as an active member of the project. There are also State Farms and State Seed Production Agencies where students could find ample opportunities to gather practical experience and also earn while learning. In Animal Husbandry and Fisheries also, there are several development projects sponsored by the States and the Central Governments where students could be fitted in a mutually beneficial manner. The greatest opportunity would be in contributing towards the organisation of meaningful work experience projects in village schools and in the building up of the ecological infrastructure for agricultural growth. Once the principle is accepted, details could be worked-out according to different agro-ecological and socio-economic conditions. The ideal method of organising such a programme could be the assignment of a cluster of three to four students comprising both agricultural and veterinary students and where appropriate, fisheries students, so that they can work together and bring about an integrated approach to land and water use planning serious consideration be given to this suggestion, since as an innovative institution, the agricultural university should give a lead in dispelling the current gloom on the educational scene in our country. More criticism that the educational programmes have become irrelevant in the context of today's needs will not take us anywhere. It is in our hands to shape the system according to requirements of today. ●

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This is the text of the paper presented by the author, Dr. Swaminathan of Indian Council of Agricultural Research at the 6th Convention of Indian Agricultural Universities Association.

# Translating marks into grades

A. EDWIN HARPER JR

WHEN converting marks into grades, or vice versa, it must be remembered that the two systems are based on different assumptions. Marks purport to be based on "absolute" standards. (Research, however, has repeatedly shown that they do not do what they claim to do.) Grades, on the other hand, are "relative". They show the relationship of a student to a normal group of students on an examination of normal difficulty.

Contrary to the assumption that they are "absolute", marks in India, are affected by the subject examined, the university where it is examined, and the difficulty of the examination. At a particular university a mark of 75, for example, may mean "Outstanding" if it is awarded to a student in English, "Very Good" if awarded in Biology, but only "Good" if it is in Mathematics. Furthermore, the highest marks awarded are much lower in some universities than in others, regardless of the ability of the students. And a student who sits for a difficult examination will get a lower mark than he would in an easy examination, in the same subject.

Grades, on the other hand, are not supposed to be affected by all these factors. They are based on the ranking of the students in a typical group. The meanings of grades should remain the same, regardless of the subject or the difficulty of the examination. (In some universities, unfortunately, this has not been so. Instead of a relative grading system, they have equated "grades" with "marks" in a rigid fashion. This is a parody of the grading system, in which all the faults of

the "absolute" marking system have been preserved. Obviously this parody has been doomed to failure.) Grades should invariably show the position of each student in the group in which he was tested (or in an average group in his university). Thus they maintain a constant meaning from subject to subject. Also, a student will get the same grade in a hard examination as he would in an easy examination, in the same subject. Extensive research, in India as well as abroad, has shown that examiners really do not know how difficult questions, or examinations, actually are. (Hence the frequent demands for re-examination, when marks are too low.) Therefore, the fact that the grading system automatically adjusts for the difficulty of the examination, means that students will neither be unfairly penalized if the examination happens, by chance, to be unusually stiff--nor will they be improperly rewarded just because the examination happens to be too easy.

To sum up, a student's mark reflects not only his ability, but also the system of marking used in that particular subject, the conventions of the university as to what the highest mark should be in a particular subject, the difficulty or easiness of the examination paper, and even the variation in standards from examiner to examiner. A student's grade, on the other hand, is determined only by his ability in the subject in relationship to the range of ability in an average or typical group in his university.

It should be evident from the above that, since the marking and grading systems are based on different assumptions, marks cannot be changed into grades by any simple, rigid formula. In English, a mark of 80 is given only to a very outstanding student, and therefore means a grade of A. In mathematics the same mark, 80, is given to students of much lower ability, and therefore means a grade of B.

The above statement gives a clue to the simplest method for translating marks into grades. Take the top mark usually awarded in the subject and university under consideration and award it an A. Take the pass mark for the subject and university under consideration, and award it a D. Award all fail marks an E or an F. Distribute the remaining marks accordingly.

For example, suppose the pass mark is 40, and the highest mark ever awarded in the subject under consideration is 95 out of 100. Thus 56 marks (40 through 95 inclusive) must be divided among four grades (A,B,C,D). This means that there are 14 marks for each grade, in a subject in which the highest mark actually awarded is 95%.

Similarly, if the highest mark is 80, then 41 marks (40 through 80 inclusive) are divided among the four grades. Each grade includes 10.25 marks. D starts at 40. C starts at 50.25, which we round down to 50. B starts at 60.5, which we round up to 61. A starts at 70.75, which we round up to 71. Table I illustrates this. This table is, as can be seen, for examining bodies where the pass marks are 40, and the maximum marks are 100. If the pass marks are 33, or 50, or (as in the U.S.A.) 70% or 75%,

different tables will have to be constructed. Similarly, if marks are awarded out of 80, or out 150, different tables will have to be constructed. Note that the first column in the table is NOT for examinations in which *maximum* marks are 80. It is for subjects in which maximum marks are 100, but 80 is the highest ever awarded in practice.

TABLE I  
Translating "Marks out of 100" into "Grades"

Grades	Marks in subject in which highest marks obtained are				
	80	85	90	95	100
A	71-80	74-85	78-90	82-95	85-100
B	61-70	63-73	65-77	68-81	70-84
C	50-60	51-62	53-64	54-67	55-69
D	40-49	40-50	40-52	40-53	40-54
E or F	0-39	0-39	0-39	0-39	0-39

Finally, note that the Table is for converting marks to grades. If grades are to be converted to marks, then the marks awarded to each grade should be the average mark for that grade, which is the middle mark of the range. For example, a C in a subject whose highest mark is 85 out of 100 would be awarded a mark of 57. (Half-marks should be rounded upward, as per usual practice.) The number of times a student's "true" mark is below the average for the grade will tend to balance out against the number of times it is above average for the grade, so that the final Grade Point Average (which can be calculated to two decimal places to provide a wide differentiation among students) will tend to be reasonably accurate.

A student with a grade of B sometimes objects saying, "If my raw score had been one more point, I would have been awarded an A. This is not fair." The student has a point; but the point is equally relevant to "marks", since we know that a student with a "true" mark of 50 has a 25% chance of being awarded 45 marks or lower (and a 25% chance of 55 or higher), due to errors of measurement. (See the UGC's *Examination Reform: A Plan of Action*). If it is felt that a finer differentiation is needed in the grading system, then students near the borderline between two grades may be awarded both of them. Thus a grade of BC may be used for the bottom one-quarter of the B's, and the top one-quarter of the C range. This means that the student's "true" grade (which cannot be known, because all measurement is inaccurate) may be a C or it may be a B. Similarly, AB, CD, and DE may be used for borderline cases. The marks near the top of the A range may be awarded an A+ to indicate "very outstanding". In calculating Grade Point Average (on which divisions or classes, prizes, etc. are based) if B and A count as 4 and 5 respectively, then AB is 4.5, and A+ is 5.5. GPA can then be calculated to two decimal places.

(Continued from page 3)

The other two functions which are also important are the discovery of knowledge and making it known to the community not only through the classroom but also through other non-formal channels. In regard to both these functions, some work is being done in our Universities but there is scope for much more. Our scientists within the universities have, over the years, given a fairly good account of themselves. Yet the fact remains that their full potential has not been reached. Now that the Science and Technology Plan is being dovetailed into the whole process of planning, I have every hope that the scientific and intellectual community would rise to the challenges and discharge the function it is expected to perform. In addition to the discovery of new knowledge, it is equally important that the Universities should bring the fruits of that knowledge to the community. It is understandable that not many Universities have done much work in this direction. Their attention so far has been confined mainly to the twin functions of discovering knowledge and imparting it to students and they have only now begun to extend it to the community at large. With the emphasis now shifting on non-formal education, there are enormous possibilities for the universities to play a pioneering role in what has now come to be called 'continuing education'. Continuing education is as much a function of the universities as of any other institutions which might be credited by the States or through voluntary effort. Indeed I am prepared to go so far as to say that some of the problems with which the universities are faced today would to a certain extent get resolved if they were to involve themselves with the community. The university exists to discover and advance knowledge and also serve the community.

The third thing that I wish to propose for your consideration is that we ought to give more attention to the social and emotional needs of our students. Expansion in recent decades has been so fast that it has not been possible for the educational authorities everywhere to meet the social needs of our students.

I want our students to get involved in the life of the community in as many ways as possible. Indeed I want them to be active within the college as well as outside it. Within the college, apart from sports and games, there can be several other activities. The more we can involve our students in them the more we will help them to cooperate with one another, to imbibe the team spirit, to take initiative and learn the various skills that go with leadership. Even if this objective seems rather ambitious, I am optimistic about our young people and I would like you who are in charge of the youth of the country to do your best to see that they are enabled to develop and grow. If we can do this effectively, I have no doubt in my mind that we would help our young people to be mentally alert, emotionally balanced and socially committed.

At the end, Shri Fakhruddin Ali Ahmed, President of India wished the Association of Indian Universities many more years of active and fruitful work.

## **Teaching of Economics**

**DR. R. K. SINHA**

THAT Economics is a Social Science neither needs emphasis nor can be contradicted. But now many are prepared to accept that Economics is a behavioural Science, that it is a sub-systems or supra systems. In theory, perhaps, all may agree, as it is common knowledge, that it concerns with actions/decisions of individual and group regarding investment, production consumption etc., which in turn rest on the status and changes in technological, scientific, political, cultural and social fields. But, when it comes to practical actions, many depart from professed agreement and take an isolated view of the situation. Besides, the tools of their analysis are often obsolete. As such, they (particularly University students) can rarely explain and in no case, can correctly predict the behaviour of any economic system. But they are expected to do it. Yet they can not, and there seems to exist a big gap. Obviously, it will not be far from being right to say that there exists a wide gap between what the present programme of economic studies offer and what they should.

### **CONVENTIONAL COURSES**

The root of the problem partly lies in the nature of conventional courses offered both at the under-graduate level and post-graduate level, and partly in the student competence. In support, one can have a look at the various courses. Of the various titles of papers, a few are listed, here : History of Economic thought, Indian Economics, Indian Labour Problems, Indian Planning, Banking and Currency, etc., A perusal of their course contents will convince every body that by and large they are descriptive and historical in character. As to student competence, it rests largely on foundation courses and admission requirement. Without any fear of contradiction it can be said that undergraduate level is open to every body except the one's from science stream. Also there are institutions, colleges and university departments where a combination of certain courses such as mathematics, history and economics etc., is not possible. At post-graduate level the minimum admission qualification is a bachelor's degree with economics. Evidently a vast majority of students come from arts stream only and to many of them mathematics, physics, chemistry are Greek and Latin.

No wonder, if persons holding even Masters degree in Economics fail to analyse, and explain developments in the economy, particularly where various advances in other disciplines have bearing on the issues involved. It is evident that professional competence of the younger generation should be upgraded. The university has a significant role to be creative and preservative of a climate of thought and reflection in various disciplines involved. It demands interdisciplinary approach and compact programmes giving an insight to the scholar for understanding the action, and reaction of the various elements involved in the system. Who will do it? Who should do it?

### **THE ANSWER**

In India, on its own, one answer has come from the Birla Institute of Technology & Science, Pilani. The Institute has realised the gravity of the problem and has introduced programmes, which are interdisciplinary and has added new horizons to the various programmes of study including that of Economics.

BITS has evolved a 5-year integrated programme leading to the degree of M.A. (Hons.). The programme has very distinguishing features unheard of in an Indian environment. The tragedy of Indian education has been to live with a three-year under-graduate education leading to a B.A. or B.A. (Hons.) degree. Three years degree is well known to be not sufficient for a terminal degree or significant as a proper precedent for a Master's degree because every Master's programme in Indian Universities starts on the assumption that not much could be done or really was done at the bachelor's level. BITS has recognised this and has made all its first degrees of five year duration. In the five-year integrated programmes as evolved at BITS the following are achieved. An imaginative sequencing of courses in the various semesters leads to an optimisation of the time spent by the student. A bold interlinking of courses across the three faculties : Engineering, Science and Humanities and Social Sciences—of the Institute gives a broad spectrum of Scientific and Technological foundation to the programme. Every student is given such a good foundation in mathematics, Science and analytical techniques that even a single student need not feel that he is a second rate

citizen because certain branches of knowledge are denied to him.

### M.A. (HONS.) PROGRAMME

The five-year M.A. (Hons.) programme has a basic Science course, a core of technical arts and a core of humanities. Students are exposed to a certain minimum of the courses in the core subjects. Every student has to take a course in engineering graphics, a course in Workshop practice and one in computational techniques with the help of the digital computer. Every student is given the necessary mathematics component to pursue these courses. As a matter of fact, in this age of computer technology and education for the future should plan to make its future citizens alive to the computer. The Science and Technology foundation that is given to these students is so broad and so strong that the specialisation that follows in remaining years of the five-year integrated programme is far more substantial than any of their conventional counterparts. Naturally, therefore, the BITS has called this as 'Hons' degree.

It can be seen in Appendix (on next page) that M.A. (Hons.) programme that BITS provides to a student specialising in economics, a student has to take three courses in English, four in Mathematics, three in technical art, nine in humanities core, two in science, three in engineering, two free electives, and one each in concepts in science, chemistry, physics, probability and Statistics, Management, Seminar and thesis. In addition to these a student has to take sixteen courses of economics excluding one departmental elective.

### PRACTICE SCHOOL

One can also see in the Appendix that there is provision for practice school I and II. This is another landmark in the process of education at BITS. During the course of the five-year atleast for one summer after the third year and one semester in the fifth year students are sent for BITS practice schools for training in an industry or social organisation or a research centre depending on the programme. A miniature BITS is located in these places and they are called BITS Practice School Stations. At practice school stations, Students work along with faculty members (who also go to reside there with them) for learning the current practice in the professional fields. They helps them acquire a professional fields. This helps them acquire a professional bias and gives them confidence to take up their profession immediately after passing out and be prepared to face the challenges of real life. As a matter of fact, the introduction of practice school is a major forward step in the solution of the problems, of our education wherein everyone complains about lack of relevance of education to society and national development.

In passing, it will be worthwhile to note that in Indian Universities the popularity of a discipline is entirely in the hands of the uniformed citizens who go by its temporal market value. The image of a discipline in an academic citadel is decided by the

popularity shown by the public to the discipline and not by the academicians who proclaim the independence of their academic thinking. B.I.T.S. has introduced programmes which bring back the prestige of each discipline to where it belongs. No programme at BITS is inferior to any other programme has been carefully examined. The course contents have been updated by leaving out materials of no relevance and modernised by orienting them with an analytical approach.

### CONCLUSION

Over a period of a decade of its existence as a Deemed University, the BITS has been engaged in evolving a relevant educational programme consistent with the needs of our country and yet attuned to the sweeping changes and the urges in an age of technology. The growth of this privately endowed technological institution from a cluster of colleges to a much applauded institution of higher learning in the country is the study of what dynamism in education can accomplish. Ever since the inception of the Institute, it has progressively taken forward steps in the cause of Quality education—steps which have been talked about over the years by educationists, but never implemented.

From the very beginning it implemented the principle that the teacher who teaches the class evaluates the student. It introduced the Semester system wherein a normal number of courses are introduced and completed. Each course is an intensive unit of education and comprises a building block which makes for the total educational programme. The programme is completed by passing course after course. There is no year wise passing or failing. Since the entire programme consists of a set of courses, the system is amenable to wide flexibility to suit many situations which have so far not been possible to accommodate in the conventional educational system.

At BITS, in the system of evaluation of the student's performance the teacher is wholly responsible for a continuous evaluation. As a matter of fact, the internal evaluation system promotes a greater communication between a teacher and his student. It tells the student where he stands and motivates him to do better in future. The common ills of University examination where people swear by a one percent difference in marks are avoided by the quality letter grading system in which students securing nearabout marks are awarded the same quality grades.

As a continuous effort to bring together the worlds of Humanities, Sciences and Technology, BITS makes a significant contribution to contemporary culture. The entire structure has been thought out in planned manner and executed with at utmost care under the dynamic leadership of the Director Dr. C. R. Mitra, a Chemical engineer by profession but one of the top most educationists of the contemporary world. To conclude, BITS is a picture of rising hopes and expectations of the young generation. Designed for tomorrow, it is a symbol of investment pay off.

## Semester-wise Breakup of the Courses for M.A. (Hons.)

Ist Semester		IInd Year	
Subjects	Units	Subjects	Units
General English I	3	Chemistry I	3
Mathematics I	5	General English II	3
Concepts in Science	4	Mathematics II	5
Engineering Graphics	4	Physics I	3
		Workshop Practice	4
IIInd Year			
Principles of Economics	3	Mathematics IV	3
Report Writing & Comprehension	3	Modern Political Concepts	3
Main Current of Modern History	3	Psychology	3
Mathematics III	3	Dynamics of Social change	3
Symbolic Logic	3	Computation Technique	3
Topics in Physics	3		
IIIrd Year			
Micro Economics	3	Macro Economics	3
Agricultural Economy of India	3	International Economics	3
Probability & Statistics	3	Econometrics	3
Principles of Management	3	Optimization Technique	3
Introductory Philosophy or Comparative Indian Literature	3	Contemporary India	3
Free Elective*	3	Free Elective*	3
IVth Year			
Industrial Economy of India	3	Public Finance	3
Welfare Economics	3	Economic Dynamics	3
Monetary Economics	3	Mathematical Economics	3
Systems Analysis	3	Macro Economic Models	3
Impact of Science & Technology	3	Operations Research	3
Vth Year			
Developmental Planning of India	3	Thesis	15
Indian Finance	3	Seminar	1
Project Appraisal	3	or	
International Economic Policy	3	Practice School II	20
Departmental Electives**			

\*This category permits unrestricted freedom to a student to choose. Courses under his own discretion provided he meets the requirements of the course that he chooses across the Institute.

\*\*Economics of Public Sector

or

Manpower Analysis

or

Urban Economics

# Correspondence Courses

## Organisation and Administration

DR. O.P. BHARADWAJ

A DIRECTORATE of Correspondence Courses is supposed to have two wings : (1) The Teaching Wing, consisting of faculty members in different subjects of studies. (2) The Administrative Wing to organise and execute the various programmes of the Directorate. The second wing acts as a link between the teachers stationed in the Directorate and the students spread all over the country.

The instructional work of the Directorate can be divided into four parts :

- (1) The writing, vetting and translating of the lecturescripts, meant for the students.
- (2) Evaluation of response sheets submitted by the students after they have received the printed lessons from the Directorate.
- (3) The broadcasting of Radio Lessons.
- (4) The organisation of personal contact programmes at different places wherever sufficient number of students is available.

### WRITING OF LESSONS

Much of the success of any programme of Correspondence study depends upon the academic standard of the lessons which are delivered to the students. The correspondence student usually has never been to a college and he has insufficient background to absorb knowledge as it is presented in books. Therefore, it is very essential that the lessons should be written and presented in a way that the student is able to pick up and absorb the given ideas without any other guidance. An experienced teacher always knows the working of the mind of a student in a particular situation and he should be able to foresee his requirements while writing a lesson for a correspondence student. He can insert some specially designed diagrams, maps, curves etc. to illustrate his lessons. The style of writing should be direct and easy. The writing of long and involved sentences should as far as possible be avoided.

It has been found very helpful to get the lessons reviewed at the end of the session. The teachers may be supplied copies of the reviewers' suggestions for their benefit. The lessons should be revised and recast every year in the light of these suggestions. Indeed, one of the advantages of supervised correspondence study is that the student's lessons can have the latest facts and figures. A book once printed takes some years to be sold out and the author is handicapped in inserting new data and diagrams in a book. But in the case of a correspondence lesson the teacher is free to develop and amend it almost every year. This is a very strong point about the lessons supplied to the students by correspondence teachers.

It is our experience that in colleges about 1/3rd of the staff consists of young and inexperienced lecturers. In the Directorate of Correspondence Education, the university teachers are always maturer and have sufficient experience of teaching such classes in the colleges where they may have served before. Moreover, the Directorate has the choice to get the lessons written from any reputed scholar in a parti-

cular field or area of specialisation even if such a scholar lives in a far away place in any part of the country. Thus, we can use to our advantage the cumulative expertise of scholars stationed all over the country.

There should be a team of good vettors and translators in a Directorate of Correspondence Courses. They may be given charge of translating the lessons into Regional languages. The language of these lessons should be easy and grammatically correct.

## RESPONSE SHEETS

At the end of every lesson (or alternative lessons) a few questions are given to the students to try their hand at answering them. Thus, if a student answers all the questions given to him during the course of the year, he would have written a few thousand pages. This is a phenomenon almost unknown these days in the colleges where rigidly structured education is being provided. In this respect the correspondence student is in an advantageous position as compared to a student in a college with formal methods of education. The correspondence teachers are expected to correct all the mistakes in the "Home Task" submitted by the students. Besides this, they should make brief observations on the content and style of the written work. There should be a provision to keep full record of the attainments of every student and from time to time this data should be processed to examine the progress made by a student during the course of his studies.

There should be a 'Research Cell' in a Directorate to study different aspects of Correspondence education. The Research Cell should not only evaluate but also provide practical guidance to the teachers and the students on various aspects which they may have studied.

## RADIO LESSONS

The teachers deliver radio lessons to the students and it should be seen that in these talks some of the important points which usually escape the notice of the students are brought home to them. The talk should fulfil its basic purpose, that is, it should be useful to the student for the examination that he is to take at the end of the year. The talk should be interesting and it should excite his mind in such a way that he may become deeply interested in that aspect of the subject. It will be of great benefit if after every talk the students are supplied a response sheet to answer certain questions on that radio talk.

## PERSONAL CONTACT PROGRAMMES

This is an important aspect of correspondence education. A good deal of preparation should be made beforehand and the teaching work at the time of personal contact programme should be conducted with all the seriousness that it deserves. No time should be wasted on expensive inaugural and valedictory functions. This programme should spread at least over a fortnight and all these days should be

utilized for intensive teaching. Before actually launching this programme in a college it is very essential to foresee the requirements of the students and the faculty with regard to the number of rooms, sufficient lighting arrangements etc. The members of the faculty should be made very comfortable at some place so that they do not waste much of their time in looking for reasonably comfortable accommodation during this short period of their stay at a particular place. On Sundays and holidays the personal contact programmes should be of a longer duration. It is very essential that after classroom lectures a teacher should be available to the students in the staff room for personal guidance and consultation. During this period the teachers should solve the problems of the students in a sympathetic manner. There should be some members of the administrative staff to look after their difficulties with regard to matters concerning the administrative wing of the Directorate.

At the time of personal contact programmes some educational films could be very easily shown. The films of Shakespearian plays or famous novels are available in abundance and the same can be screened for their benefit. The playing of lingua phone records at the time of personal contact programmes can be of great benefit in helping the students pick up correct pronunciation. The use of charts, diagrams and curves should be made on a large scale during this period.

It has been found that the setting up of a Camp Library for the students during this period has been useful. The students are hungry for knowledge and if their mind is exposed to good books they are in a position to immensely benefit from the same.

The need for a study Centre for our students is agreed upon by all the educational experts. It should be made possible for the students to come to a study centre in the evening after their normal routine of duties. There should be a few teachers available to guide those students who are in need of such guidance. Besides getting the books issued at such centres the students can sit and read books and have discussions with the teachers in different section. At the study centre which may originally be located on the campus of the University there should be ample provision for audio-visual aids of all types.

It is also desirable that a language laboratory may be made available at the study centre. The study centre can later on be developed as a centre for some indoor games where our students can have some play and relaxation from the daily humdrum of life. At a later stage the students can form even debating and dramatic societies and compete with some evening and day colleges. This will add a new dimension to the life of our students who are very keen to learn while they are earning their livelihood.

In addition to these four main facets of the academic work of the Directorate, the following two features have also been found to be very useful to the students :

- (a) The publication of a magazine; and
- (b) The introduction of Tutorial System

## THE MAGAZINE

The publication of a Magazine by a Directorate of Correspondence Courses serves to provide to the students a forum for self-expression. The Magazine can nurture and sustain their creative potentialities and make mutual exchange of ideas between students possible. Besides, it can also serve as an additional informal link between teachers and students; for here they can express themselves outside the limits of prescribed curricula.

The Magazine should normally have sections in all the major languages known to the students, including English. There can be also regular specialised sections on certain fields of learning, e.g., the country's planning effort, its cultural heritage etc. The Magazine may be printed at least twice a year so that the features published in one issue can be commented upon by the students in the second issue.

Since the correspondence students—at least in the earlier stages of the Directorate's development—have no other forum to express themselves at length, the importance of the Magazine can hardly be gainsaid. Apart from encouraging written work, the Magazine gives the students a sense of belonging.

## TUTORIAL SYSTEM

It has been found very useful to introduce the Tutorial System to encourage this sense of belonging in the students. Under this system, the names of teachers, their subjects and their areas of specialization—in undergraduate classes this would mean the classes they specialize in—are communicated to the students. The students are encouraged to write to the concerned teachers to get their academic difficulties removed. In many cases, the students write to the teachers not about their academic difficulties, but about some personal problems. Such letters should not be spurned by the teachers but sympathetically attended to. Nothing gives the student more comfort than the feeling that he is cared for.

## ADMINISTRATIVE SET-UP

In a Directorate of Correspondence Courses two administrative wings are essential : (i) Accounts and examination wing. (ii) Establishment, response-sheets, writing, printing and despatch of lessons etc.

(i) **Accounts and examination wing :** This wing should be under the charge of an Assistant Registrar and he should be assisted by at least two Superintendents. The rest of the staff in this wing will conform to the prescribed norms in the University Office. This wing should undertake the work of receiving admission forms of the students in the first instance. After the forms have been received, the checking of the fee accounts and the eligibility of all the students should be finished in the minimum possible time so that a student is above to know his position *vis-a-vis* the Directorate of Correspondence Courses in the minimum possible time. No case of eligibility

should linger on beyond 15th of August. This is a wing which is responsible for all types of correspondence with the students during the course of the year. It is responsible for their admissions to the University examinations and later for the declaration of their results. After the declaration of the results this wing should see that the "later on" and "cancelled" cases are decided in the minimum possible time so that no student feels harassed on this account. The two Superintendents under the Assistant Registrar may be allotted different classes for checking up the eligibility etc. It is also advisable, if the number is sufficient, to have a separate Accounts Branch under a Superintendent or a highly qualified Accounts Officer. It has been the experience that the accounts in some Directorates have not been maintained well. No organization can afford to have badly maintained account books. The collection of revenues and their careful utilization is one of the fundamental aspects of any good organizational set-up.

(ii) **Establishment, response-sheets etc. :** Many lessons are written by the Directorate's own faculty members. Still, a lot of lessons have to be sent to the field for writing and it is an important duty of this wing of the Directorate to get the lessons written from competent persons. (The lists of the writers will be carefully prepared and supplied to the office by the members of the faculty. The Heads of the Departments would co-ordinate this work). The writing and vetting of at least half the lessons should be completed by the teachers during the months of March and April i.e. before they leave for summer vacation. The Directorate must have half the completed lessons in their possession before the teachers leave for vacation. It is very essential to have the quotations for printing these lessons during the vacation so that the printing of the lessons is started as early as possible. The despatch of the introductory lessons and the syllabi should not be made to linger beyond 21st of August i.e. the date by which the number of admitted students has been ascertained by the Directorate. During the course of the year it should be seen that two lessons in every subject of study for a particular student are despatched to him before the 10th of every month and the same number of lessons are despatched to him after 23rd of every month. In order to execute this work, a very highly sensitive and watchful machinery is to be set-up in the Directorate. Almost every day the latest position of every lesson in the field has to be ascertained. Any small delay at the particular level can delay the whole work. It is not possible to despatch lessons in different subjects at different periods. That will involve a lot of additional expenditure. It should also be seen that the student gets the correct medium which has been offered by him in his admission form. Nothing frustrates a student more than the fact that he gets a wrong lesson or a wrong option or a lesson in a wrong medium. A good deal of check up should be done by the Superintendent and the Assistants themselves before these lessons are actually despatched to the students. In cases where a lesson has not been received by a student,

a bundle of new lessons should be sent without much discussion or long correspondence. It has been experienced that very few students like to have a double set of lessons. Mostly their complaints about non-receipt of lessons are genuine and should be looked into quickly.

The response-sheets received by this section should be got evaluated by the teachers in the Directorate very systematically and the same should reach the students at regular intervals. The response sheets which are sent in the field should also be got examined in the minimum possible time in the interest of the student. The loss or response sheets should be avoided.

There are students sitting in the far flung areas of the country and some of them are stationed in overseas countries. It should be a very important duty of the Assistant Registrar to see that the mail reaches them expeditiously and promptly. The creation of examination centres for the students in different parts of the country should be taken up as early as possible so that all arrangements are completed at the right time.

A good deal of co-ordination between these two wings is necessary and for this purpose there should be a Deputy Registrar who may co-ordinate the work of the two branches. He should be a sufficiently mature and experienced person. He should at least possess a master's degree. This is not a work which could be done by a person of small administrative experience and, therefore, a carefully chosen senior officer only will be able to deliver the goods.

The work of the two wings i.e. the administrative and the teaching wings should be co-ordinated by a Director who should be an academic person with sufficient experience, maturity and academic attainments. He should at least be in the grade of a Professor. This is not a work which can be done by a part-time member of the teaching staff drawn from the University Departments or an honorary Director. The greatest mistake which can be made in a Directorate of Correspondence Education is the appointment of honorary Directors or part-time Heads of the Departments. Only teachers who are committed to this programme and have a sense of complete involvement can deliver the goods. It is a new experiment which has large implications and if the programme is not managed by a sufficiently mature and serious-minded administrator it is bound to fail and bring bad name to the Universities.

Besides the Administrative and the teaching wings the following additional Departments are essential :

- (i) Cartographic section.
- (ii) Audio-visual Aids section.
- (iii) Research unit.
- (iv) Library both lending and reference.
- (v) Press.

(i) **Cartographic Section** : Numerous diagrams and maps are to be drawn for the lessons in Geography, History, Mathematics and Economics. There should be a Cartographic section to undertake this

work. The part-time workers in this Department are not able to deliver the goods.

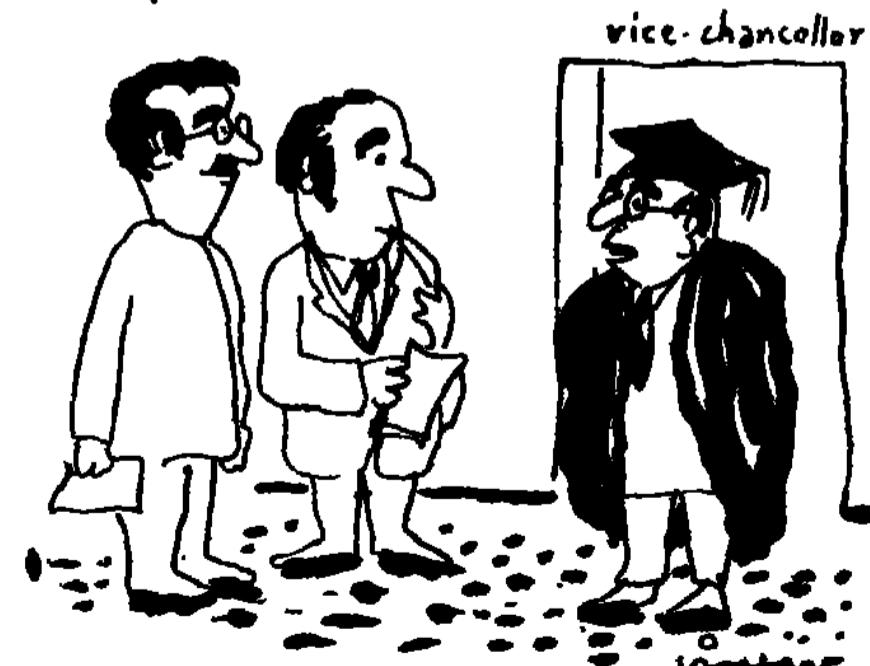
(ii) **Audio-Visual Aids Section** : This section should have a well stocked film library pertaining to the films on plays and novels prescribed in English, lessons in Geography, History and other subjects. These films should be screened at the time of personal contact programmes.

(iii) **Research Unit** : There is a need for research on the techniques of lesson writing in different subjects. A lot of data is collected at the time of personal contact programmes and the same should be analysed and processed. The papers published may be circulated for the benefit of the teachers working in other Directorate in general and teachers of the Directorate where such a work is undertaken in particular.

(iv) **Library** : A good reference and lending library is the essential dimension of this programme. Teachers have to make frequent references to such a library. The publications giving reference data for the different disciplines should be subscribed to. There should be large number of copies of the text books for the use of the students. Besides these books there should be books of general nature which may provide new ideas to the teachers.

(v) **Press** : The Directorate of Correspondence Courses will always feel greatly handicapped in the absence of a press of its own. It is very risky to depend on presses in the private sector. The quality of lessons will considerably improve if the Directorate has a press of its own.

## ~~U~~ Explosion For Peaceful Purposes



"We expelled the students in the interests of campus peace..."



**GLIMPSES  
OF AIU  
GOLDEN  
JUBILEE  
CELEBRA-  
TIONS**



# CONVOCATION

## Self-Sufficiency in Agriculture Essential

—J. Vengal Rao

WHILE delivering the Ninth Convocation Address of APAU, Shri J. Vengal Rao, Chief Minister of Andhra Pradesh, said that the progress of our country depends essentially on the success of our programmes for agricultural development. If we have to attain economic strength and maintain high political stature in the comity of Nations it is essential that we achieve self-sufficiency in agricultural production and eliminate for all time dependence on foreign supplies in the basic necessities of life. It is not merely a question of growing what we need. What we should really aim at is the development of agricultural surpluses in strategic fields which will, in turn generate resources for accelerated growth in all sectors of our economy.

In finding a solution to this problem one must bear in mind the special features of the Indian situation against the background of which all our measures will have to be devised. We have no doubt large extents of arable land consisting of different soils and located in different agro-climatic zones. This, while it provides an opportunity for cultivation of a wide variety of crops, also poses the challenge of evolving different agricultural technologies. We have a number of perennial rivers, but there are also which are critically dependent on the vagaries of an erratic monsoon. We have a large number of small holders, the size of whose operational units may be well below the minimum considered essential for economic viability in foreign countries. We have a big agricultural labour force, but little capital. All these circumstances highlight the need

to evolve solutions that are suited to the Indian condition.

In our country it is basic to our National philosophy that programmes for development are inter-related with efforts to ensure the equitable sharing of the benefits realised from such development. In concrete terms this means that the increased incomes generated through the application of improved technology can no longer be the monopoly of the privileged few, but will have to be distributed over a wider base. This will call for not only regulatory measures, such as Land Reforms, but also the extension of special supporting services to the small and marginal farmers.

He said that the Agricultural University has an important role to play in the devising and implementation of these programmes. While it is the responsibility of the Government to provide the necessary infrastructural and administrative support for implementing these programmes, it is for the University not only to devise optimum solutions but to take an active part in testing them on the field and in regularly monitoring the progress achieved in their implementation. The Agricultural Scientist of today cannot merely be a repeater of dogma. He has to be an innovator and path-finder and a guide to the policy-maker and it is to the Agricultural Universities which are the principal institutions for imparting instruction and training in agricultural science that we look for creating the conditions of work and study that facilitate the emergence of such original talent.

He referred briefly to two or

three specific problems of importance in the context of the present day. The first relates to economic use of irrigation water. It is essential therefore that the Agricultural Universities and the Research Scientists devote increased attention to the optimum use of irrigation water. This may call not only for remodelling or redesigning of some of our drainage and irrigation systems, but also for the adoption of new or improved cropping patterns.

The second aspect is the need to evolve an appropriate institutional framework for the supply of inputs and services to the farmers, particularly to the small and marginal farmers. There is, of course, a constraint imposed by the overall limitation of supplies; but even apart from this one hears of the difficulties faced by the farmers in securing inputs and services in time and at reasonable cost. There is an urgent need, therefore, to devise a mechanism by which farmers can conveniently secure the inputs and services within the easy reach of their farms. This is a subject to which the Agricultural University could give thought and come up with appropriate solutions.

The third aspect which calls for more intensive study, is the need to devise a proper system of marketing of agricultural produce. Today complaints are often voiced that the full benefit of increased production and increased prices do not accrue to the producer on account of a faulty system of marketing. It is essential that we should re-organise our systems of marketing particularly in respect of commercial crops which are subject to wide-ranging variations in prices with a view to ensure that the benefits of increased agricultural output are equitably shared between the producers and the consumers without being appropriated by unscrupulous middlemen. The devising of such a system should be a fruitful field for agricultural research.

# From the Press

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## Vice-Chancellors Club

Prof. V.V. John writing in the Statesman under the heading 'Vice-Chancellors Club' says :

THE Association of Indian Universities, known until recently as the Inter-University Board, has completed its half century. There is some irony in the circumstance that the golden jubilee should come at a time when the Association has nearly reduced itself to the status of the club to which Groucho Marx wrote that he did not wish to belong to a club that accepted members like him. The irony was aggravated by the effort of some Vice-Chancellors on the eve of the celebrations to form a convention of Vice-Chancellors, a new club for VCs, to deal with urgent problems.

As it happened, the convention turned out to be a non-event. The initiative was taken by Dr. Shrimali, fresh from his experiences of a midnight attack on his residence on the Banaras campus by a student rabble.

He was joined by the Vice-Chancellor from Gaya, who has had a longer and more sustained experience of harassment by students. They wanted to focus public attention on the threat that violence posed to the functioning of universities. At some stage in the projected campaign they thought it expedient to make it a part of the general defence of democracy, socialism

and secularism. Since these were familiar slogans in the mouths of discredited politicians, the convention was immediately suspected of political intent, and the reticence of the Vice-Chancellors in regard to what was discussed at their interview with the Prime Minister was not helpful in clearing the air. It also did not pass unnoticed that less than 20 of the 60 odd Vice-Chancellors who came for the jubilee celebrations stayed on for the convention.

### NOT NEW

The problems to which Dr. Shrimali and his associates sought to draw public attention are not new, nor the suggestion to deal with them on a national basis. Two and a half years ago, Dr R. K. Singh of Himachal Pradesh University drew the attention of the Central Advisory Board of Education to the unreality of talking of reform and innovation at a time when the minimal physical conditions for the normal functioning of universities did not exist. He suggested that, to tackle the issue on a national basis, the Prime Minister should take the initiative and call the Chief Ministers and Vice-Chancellors into conference and decide on urgent steps to create conditions in which higher education would be possible. Subsequently he also

addressed a direct appeal to the Prime Minister. No conference was, however, convened.

The anarchy in the universities today is no worse than it has been for the last three years and more. The reason, alas, is that things have been so bad that they cannot get any worse. There was, therefore, some curiosity as to the special urgency for a special confabulation. There was also some questioning as to why the Vice-Chancellors did not consider the Association of Indian Universities, which was in session in Delhi for three days, an adequate or appropriate forum for discussing the problem.

This provides an insight into the present status and functioning of the Association. Since it is a voluntary association, it cannot be any more powerful than its members, the Vice-Chancellors and their universities want it to be. If they wanted it to be powerful, the absence of statutory powers would not stand in the way. There were times in the past when State Governments listened to the Inter-University Board's objections to certain aspects of university legislation and made the desired amendments. Incursions into university autonomy were protested against, and the Governments thereupon desisted.

Even in the old days the Board often passed the buck. In 1945, replying to a protest regarding alleged governmental interference with university autonomy, Sir John Sargent, while promising action, wrote to the Board : "I have sometimes found the IUB inclined to postpone consideration of matters which are likely to be difficult or controversial." The instance he proceed-

ed to mention was the question of lecturers' salaries and their security of service.

## INDECISION

A favourite gambit of the Vice-Chancellors, whenever called upon to deal with any issue of common interest to the universities, was to refer the matter to all the universities for eliciting information, a process that took so much time that some new problem would have supervened before the collection of data was completed. Or, the Association left it to the individual universities to take "necessary action". This happened with the use of academic gowns at convocations. Responding to the clamour for a change, or even anticipating such clamour, some universities began replacing the traditional gown with scarves or shawls or rosettes and other odd-looking badges. The Inter-University Board did not try to obtain agreement on a common insignia that could be recognized as such throughout the country; it did not even try to get the fancy dress abandoned altogether. What it arrived at was not so much a decision as an indecision, to leave the matter to the individual universities.

This, however, was a small matter on which a decision or the absence of it did not make much difference. There have been many issues on which the Vice-chancellors should have spoken, and given a lead to the academic community and the country, and did not. An example is the question of language studies and the medium of learning at the university. Dr Triguna Sen's highly competent analysis and suggestions at a conference of Vice-Chancellors in 1967 were not followed up. The reform of examinations is another instance. The Inter-University Board organized a seminar on the subject in 1971, and produced the most valuable report on the subject we have to date. But the Vice-Chancellors were not moved to action until the University Grants Commission produced its less literate formulations and nomi-

nated 12 universities to lead the way.

The most recent instance of the failure of the Association of Indian Universities is its silence on the confusion regarding the revision of the salaries of university and college teachers. The Central Government has not been able to obtain the concurrence of all State Governments in the matter, and, as a consequence teachers in many regions have threatened to boycott examination work. One has waited in vain to hear the authoritative voice of the Vice-Chancellors on the subject. On the question of violence on the campus too, the Association could have spoken authoritatively, without the political overtones that Dr Shrimali's move has produced.

The impotence to which the Vice-chancellors have reduced their own Association is one of the saddest chapters in the history of higher education. Several factors contributed to this. The University Grants Commission, which is 30 years younger than the Association, has, through accident and sometimes by design, not allowed the Association to play a decisive role in the making of policy in regard to higher education. There is some irony in the fact that in 1952 the Central Government planned to set up a Council of University Education, which was opposed by the Inter-University Board as a potential danger to the freedom of universities to regulate their own policies and programmes. Instead, it suggested a University Grants Commission.

What was hoped for was an Indian equivalent to the University Grants Committee in Britain which worked in close collaboration with the Committee of Vice-Chancellors. The pattern, transplanted on Indian soil, developed unwholesome characteristics. That the UGC was called a commission and not a committee must have filled it with a special sense of its own importance. Almost from the beginning, its attention was devoted to distributing money

rather than to coordinating and determining academic standards, which was its statutory function. As it happened, even on the modest scale on which it was provided with funds to disburse, money power proved to be more effective than the power of ideas.

## WEAKNESS

Meanwhile, the Inter-University Board was too infirm of purpose to step in as the guardian of academic values. And even when an amendment to the UGC Act disqualified Vice-chancellors from membership, they did not develop enough professional self-respect to refuse to serve on a subordinate advisory committee, where they would have been a sort of back-room boys to the Commission. They could have insisted that the UGC should consult their Association on all important matters, but they did not.

Perhaps the worst illustration of the straits to which the Vice-chancellors have reduced their own Association is what happened to the Association's plan for a centre for research into higher education, supported by a network of research units in the universities. Financial assistance was sought from the Government, though it was not beyond the means of even our indigent universities jointly to support such a venture. The idea was accepted "in principle" by the Government and the UGC, which is the new, painless way of killing good ideas. In the event, the ambitious plan for a continuing study of our policies and practices in higher education was reduced to a miserly grant from the Ministry for an examination research cell under the auspices of the Association. That was in 1971. There was some hope that the idea of a full-fledged research centre and a network of research units in the universities would be revived during the jubilee celebrations. It received no attention except for a passing mention in one of the seminar discussions. The Vice-chancellors were busy defending democracy, socialism and secularism.

# *Round Up*

## *Gandhi Memorial Lecture*

### **Nag Chaudhuri appeals for Common Code of behaviour**

While delivering the Gandhi Memorial Lecture at the Raman Institute, Bangalore, the Vice-Chancellor of Jawaharlal Nehru University, Dr. B.D. Nag Chaudhuri, appealed to the scientists in the country for working towards a common code of behaviour which would enable the scientific community to enter into a change-forcing dialogue with society.

The most remarkable feature of Gandhiji's life was his nearness to the Indian ethos, achieved through deliberate choice and considerable personal effort and his perception with a terrible clarity and anguish of the inherent contradictions and traditional folly in our ethos.

Gandhiji perceived that no collective and determined social action could base itself on the acceptance of the validity of multiple truths and realised the social necessity of a concept of an unequivocal simple-minded truth based on empirical experience. It was because of this that Gandhiji chose truth, security and conformity as targets in his change-making carrier.

Gandhiji's major thrust, the reinterpretation of the old ethos in terms which were valid for himself and for society was a greater contribution to Indian society, Dr. Chaudhuri said, than the contribution of Indian sci-

ence because he at least deliberately courted certain elements of confrontation and conflict which led to an attempt at defining new social relationships.

Indian scientists, by and large have acquiesced in the acceptance of multivalued truths, preferring to remain encapsulated in Indian society with the result that without the confrontation with the social ethos, the scientific community has grown fragmented and capable of very little co-operative effort.

After Independence, certain advantages did accrue to science, Dr. Chaudhury, said but these were not gained through the scientist's confrontation and conflicts with society. "They were handed on a platter by Nehru who was deeply conscious of science as the new method that would create new social attitudes as well as solve economic problems."

On the other hand, the process of encapsulation of science has been helped by all the small and big privileges that scientists have been able to command due to Nehru's enunciations of expectations from science; Dr. Chaudhuri said and added "avoiding conflicts of ideas may enable us to accept small privileges in return for abdication of our right to assert themselves in the reconstruction of value systems which

had been tested and had been found to have outlived their social purpose."

Indian science, he said, was in danger of being engulfed by the Indian ethos and the scientists may drift further into encapsulation which while it might swathe him like a cocoon and give him a sense of safety, and even belonging, actually renders him more isolated, fragmented and ineffecttive.

The other dangers, no less serious, were the pursuit of unreal goals, finding solace in the international community and unconcern with the real life problems of the community in which scientists live without concurrent hopeful evidence of growing countervailing forces of common purpose and direction.

Change, he said, could only come through confrontation and conflict between the social ethos and the forces of science, empiricism and rationality and the resolution of the conflict through analysis and rejection of certain old values which slow down or negate changes and analysis and assimilation of new ideas and values.

Conflicts between the Indian ethos and the culture of science should not be avoided, but faced and sharpened. "Unless these conflicts are faced with fervour and collective persistence, we lose our social reason to exist," Dr. Nag Chaudhri told the scientists.

The scientific community's contributions to the value of non-conformity and to the encouragement of adventure of the mind and body can be significant in a society strongly conditioned to conformity, Dr. Chaudhuri said and added that what is needed as a preliminary step is public discussion by scientists of the elements of the scientists' ethic and attempts at formulation of guiding principles which the scientific community can accept and the society at large finds credible.

Dr. Chaudhuri's concluding words to the Indian scientific community were: "perhaps our community needs sorely today, some of Gandhiji's spirit of confrontation and conflict on behalf of our basic ideology."

# Impact of green revolution

MR. S. P. BAGLA, Finance Secretary Punjab, called upon the faculty of Punjab Agricultural University to study the impact of the green revolution on the sociological behaviour of the rural people. He said the time was also ripe to go into the problems of rural labour and the distribution of wealth amidst the land owners, farmers and labourers.

Speaking at the convocation-cum-prize distribution function of College of Basic Sciences & Humanities, Mr Bagla regretted that the distribution of wealth within the rural community as a result of the new agriculture was uneven. Despite the progress made by the State there was enough evidence to show that 40 per cent of the rural population still lived below the poverty line. He said there was a need to study what returns were being ploughed back into the government kitty once the money was spent to pay for the infra structure of agriculture, like building a road to a village, supplying electricity, opening a dispensary or a school. He said once the farmer's mind and health were improved his efficiency to produce more would increase resulting in better harvest. Even the agricultural graduates helped in reducing the cost of cultivation because they have the knowledge of the inputs which are to be applied in agriculture. Referring to the indiscipline amongst the students, Mr Bagla said, it arose out of the current economic situation. Change in morality, family pattern, human bondage and in attitude that has taken over the last decade, has also to be taken note of.

Dr. M. S. Randhawa, Vice-Chancellor said the government has two challenges to face namely inflation and agricultural development. It had to see that one did not have an adverse effect

on the other. There had to be a consistent endeavour to cut down the cost of cultivation because both the city and village people would be hard put if the cost of food went up.

Dean of the College, Dr. A.S. Kahlon, presented the progress of the college and highlighted the research achievements of the different departments.

## Unemployment rate high

UNEMPLOYMENT was already rising in several parts of the world toward the end of 1973, and in 1974 it increased in more than 30 countries—sharply at times, particularly in some of the industrialised areas.

Unemployment remained particularly high among young people. In Malaysia, two job-hunters out of every three were below the age of 25. In Canada in October 1974, half the unemployed were aged between 14 and 24.

In the United States, the rate of unemployment among workers aged from 16 to 19 exceed 17 per cent in November and December 1974—three times the rate for the over-twenties.

In several industrialised countries including Australia, France and Sweden, the number of unemployed women equalled or

even exceeded the number of unemployed men.

The biggest increases in unemployment were recorded in Cyprus and Denmark where the number of jobless rose more than four times.

In Australia, Chile and the Federal Republic of Germany, the number of people out of work practically doubled.

France, Greece, Israel and the United States had a rise of more than 40 per cent over the latest 12 months for which figures are available. There were noticeable increases in Belgium, Ghana, India, Ireland, Japan, Malta, the Netherlands, Nigeria, Pakistan, Puerto Rico, Spain, the United Kingdom and Yugoslavia.

Some of the industrialised countries had rates of unemployment that had not been since the 1940s. In France, the number of unsatisfied applications for work in September 1974 exceeded 500,000 for the first time since February 1941. They went on to reach a record level of 700,000 in November. Australia also reached in November the highest level of unemployment since the Second World War.

In the United States in the 12 months to December 1974, the number of unemployed persons rose by more than 2 million to reach a total above 6,100,000—again the highest figure since 1941.

## Chancellor inaugurates Bhai Vir Singh Chair

VICE-PRESIDENT of India and Chancellor of the Panjab University, Mr. B. D. Jatti, said that intellectuals must build bridges of understanding between different languages, faiths and beliefs as most of the misunderstandings were the result of ignorance and isolation. The intellectuals had a special responsibility to see that linguistic parochialism and intolerance of any kind did not spread. It was the national policy to build up a homogeneous society of different languages,

religions and beliefs on the basis of mutual respect and tolerance. The problem of national integration was one that fell within the purview of the intellectuals in a very special way, he added.

He said that the intellectuals could not afford to be silent spectators when the country was passing through difficult times. Academics could not live in isolation as the concept of the objectives of universities had changed. He pleaded that universities should function as an

instrument of social and economic change. They had the responsibility to equip the coming generations to discharge their duties to the country and the world. Continuing, he said the universities should also take up the added responsibilities, particularly in developing nations, to study and analyse current national problems in the social and economic fields with a view to providing invaluable information to the administrators for devising remedial measures.

Mr. Jatti paid glowing tributes to the pioneering work done by Bhai Vir Singh in raising the status of Punjabi language and literature. In fact the mystic poet had blazed a new trail, in Punjabi writing as Punjabi was not accepted as a vehicle of literary and refined ideas before the emergence of Bhai Vir Singh. His missionary zeal in promoting Punjabi as a literary language bore ample fruit and today we see Punjabi enthroned in its rightful place, he added.

The Chancellor hoped that the Department of Bhai Vir Singh Studies would not only become the centre of intensive study in the philosophy of Bhai Vir Singh, but will also be a focal point in the study of modern languages and literature. He expressed the view that it would be beneficial to Indian literature if Bhai Vir Singh's works were translated into other regional languages, which could promote emotional integration in the country. By creating this Chair, the University had added a new dimension to its academic life and provided a new start to the research and study of modern literature, he concluded.

Earlier, Mr. Jatti also released *Bhai Vir Singh Sandarbh Kosh* (a bibliography of books and articles on Bhai Vir Singh). This multi-lingual reference book, which has been prepared by the Department comprises about seven hundred entries in Punjabi, English, Hindi and Urdu. An exhibition of books and some personal relics of Bhai Vir Singh was also arranged on the occasion.

Professor Ram Chand Paul,

Vice-Chancellor, in his welcome address, said universities owed their sustenance to the community and in fact there was an intimate inter-dependence between the two. With the establishment of the Bhai Vir Singh Chair another milestone had been covered and the Panjab University had been striving its utmost to do its best to meet the aspirations of the community, he added.

He said that Bhai Vir Singh's name was a legend in northern India. He proved even oskeptics that Punjabi could be as good a language as any other for the expression of fine ideas, thoughts and sentiments. He described Bhai Vir Singh as a prolific writer, a journalist, a novelist, a noted prose critic, a dramatist and above all a poet. Bhai Vir Singh had left a rich legacy of lyrical and mystical poetry and ornate prose, he added.

He announced that the Department of Bhai Vir Singh Studies in Modern Literature would institute research fellowships in southern languages like Kannada, Tamil, Telugu and Malayalam, if the Punjab Government gave necessary grant.

## Workshop on Home Science

INAUGURATING the three-day workshop on curriculum for Home Science in agricultural universities, Dr M. S. Randhawa, Vice-Chancellor, Panjab Agricultural University suggested that the subject of Home Science should be introduced in all the girls' schools throughout the country. For harmony in the home in modern times, it was necessary for the housewife to be educated. With the change that has taken place as a result of the green revolution, there is a need to improve the personality of village women, who have been neglected so far. Since women are the nucleus of a family, their education and knowledge of home management concept need to be strengthened.

The workshop has been sponsored by the scientific panel on home science constituted by

Indian Council of Agricultural Research, New Delhi. It is being hosted by the College of Home Science and about 20 delegates representing heads of the home science institutions in the country and other experts are participating.

Dr (Mrs) D. Deulkar, Chairman of the Scientific Panel of the ICAR, outlined the objectives of the workshop. She said it is a matter of pride that the agricultural universities have come to recognize the importance of home science. She further said, "the felt needs have prompted us to give a serious thought of starting short courses for rural youth, both men and women and functionaries".

## Classified Advertisements

(Continued from page 27)

(i) Five posts (Temporary) — Three in Pharmaceutics, One in Pharmacognosy & one in Pharm. Chemistry.

II. Two posts of Instructors: (Salary scale Rs. 200-15-290) (Temporary, likely to be made permanent).

### QUALIFICATIONS:

(a) Atleast a second class Master's degree of an Indian University or equivalent qualification of a foreign University in the subject concerned.

(b) Knowledge of Hindi will be desirable.

3. (a) Permanent posts carry D.A., Additional D.A., P.F. & Medical Allowance benefits according to University rules in addition to pay-scales.

(b) Temporary posts carry D.A., & Medical Allowance in addition to pay-scales.

3. Candidates already in service should send their applications through proper channel. An advance copy, however, may be sent. The application should carry a testimonial with regard to the work and conduct of the candidate from the Head of the Institution he is serving or has last served.

4. Candidates selected for an interview will have to come to Sagar at their own expense and bring with them their original research papers, degree etc.

5. The period of probation shall be two years from the date of substantive appointment to permanent posts. This period of probation may, however, be extended by such further period as the Executive Council may deem fit, but the total period of probation shall in no case exceed three years. Service during temporary appointment & during the probationary period may be terminated without notice and without assigning any reason.

6. The age of retirement is 60 years.

R.N. Dhawan,  
Actg. Registrar,  
University of Sagar.

# **Indian School of Mines,**

## **Dhanbad-826004**

Applications invited for admission to the two-year Industry-Oriented M. Tech Degree programme in Mining Engineering, in prescribed form obtainable from the Registrar, Indian School of Mines, Dhanbad-826004, on sending a self-addressed envelope affixed with stamps of the value of Rs. 1.65. Applications with marksheets relating to the final as well as the penultimate year examination of the first degree in Mining Engineering and documentary evidence of practical experience (where required), should be submitted to the Registrar by hand or by Registered Post/A.D. on or before June 14, 1975. The programme is expected to commence on July 14, 1975. Applications of sponsored candidates would come through their employers. **Specializations offered:** Mine Planning and Design/Rock Mechanics/Mine Environment/Open-pit Stability Design of Blasts/Sands towing Plants, Mine Safety Engineering. **Eligibility:** First class degree or equivalent in Mining Engineering Holders of Degree or equivalent in Second class may be admitted provided they show evidence of special ability for research or have atleast three years field experience after graduation. Candidates sponsored by employing organisations preferred. **Sponsorship** means retention of lien on post and grant of a suitable allowance. **Programme Structure:** One year to be spent at the School for institutional instruction, and one year in the industry on an approved project. Some of the unsponsored candidates may be eligible for a Junior Fellowship of Rs. 500/- p.m. tenable for 24 months.

Admissions will be made on merit on the basis of a qualifying test and taking into consideration aptitude and ability. For further details contact Head of the Department of Mining, Indian School of Mines, Dhanbad-826004.

davp 811(1)/75.

# CLASSIFIED ADVERTISEMENTS

**PUNJABRAO KRISHI VIDYAPEETH,  
P.O. KRISHINAGAR, AKOLA.  
(MAHARASHTRA)**

## Advertisement No. BCA/0874 (I)

Applications in the prescribed forms are invited on or before 31-5-1975, for the following posts in the pay scale of Rs. 300-20-460-EB-20-500-25-650-EB-30-830/- in the Gram Sevak Training Centres under the University.

1. Lecturer in Agriculture in the discipline of Horticulture

2 Posts

2. Lecturer in Agriculture (Plant Protection)

2 Posts

3. Lecturer in Animal Husbandry

1 Posts

4. Lecturer in Cooperation

2 Posts

5. Chief Instructress (Home Science Wing)

1 Post

6. Chief Instructor (Workshop Wing)

1 Post

AND

7. Assistant Instructress (Home Science Wing) in the Scale of Rs. 200-10-290-15-350

3 Posts

search only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

### (III) Lecturer in Animal Husbandry :—

(i) (a) Bachelor's degree in Veterinary Science and Animal Husbandry of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Experience for a period of 3 years in Field or teaching.

OR

(ii) Master's degree in Veterinary Science (in Surgery-Medicine group or in Physiology Anatomy group or Livestock Production) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research and with atleast 45% marks in the aggregate or with Research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

### (IV) Lecturer in Cooperation —

(i) (a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate, or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Agricultural Economics) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and Research and with atleast 45% marks in the aggregate, or with Research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

OR

(ii) Master's degree in Arts in Economics of any University with atleast 45% marks in aggregate with Post-Graduate diploma in Cooperation of any University or Institute.

### (V) Chief Instructress (Home Science Wing) :—

(a) Bachelor's degree in Home Science of any University/Institute recognised as such by this University.

AND

(b) Master's degree in Home Science of any University /Institute recognised as such by this University.

### (VI) Chief Instructor (Work Shop Wing) :—

(i) (a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and Research and with atleast 45% marks in the aggregate or with Re-

in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (Agricultural Engineering) of this University or a degree or diploma of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and Research and with atleast 45% marks in the aggregate or with Research only or with the Course Credit and Internal Evaluation system of Education (Semester or Trimester).

OR

(ii) (a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Bachelor's degree in Agricultural Engineering of this University or of any University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(iii) Bachelor's degree in Engineering (in Mechanical or Electrical) of any University or Institute with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

### (VII) Assistant Instructress (Home Science Wing)

Bachelor's degree in Home Science of any University/Institute recognised as such by this University.

### 3. AGE

Not more than 30 years as on 31-5-75 relaxation in age allowed to the employees of this University or any other University, in India, Central and State Govt., Scheduled Castes/Tribes and Other Backward Classes to the extent permissible under Rule.

4. Prescribed application forms and instructions are obtainable on request from Assistant Registrar (Establishment) of this University or payment of Rs. 2/- as application form fee. Applications complete in all respects must reach the Registrar, Purjabrao Krishi Vidyapeeth, Krishinagar, Akola, Maharashtra, together with an application Registration fee of Rs. 8/- (Eight only) non-refundable not later than 31-5-1975. Payment of fees must be made through Crossed Indian Postal Orders payable to the Comptroller, Purjabrao Krishi Vidyapeeth, Akola, Maharashtra. Request for Forms must specify advertisement No. Name of the post and Item No. and should accompany a self addressed un-stamped envelope.

## 2 QUALIFICATIONS

### (I) Lecturer in Agriculture in the discipline of Horticulture

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate, or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Horticulture) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and Research and with atleast 45% marks in the aggregate or with Research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

### (II) Lecturer in Agriculture (Plant Protection) :—

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate, or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Entomology or in Plant Pathology) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and Research and with atleast 45% marks in the aggregate or with Re-

lope for each post, atleast of the size of  $23 \times 10$  cms, including thereon the post(s) for which Form(s) is/are required. separate application with separate fee is required for each post.

5. Candidates already in the service of Central/State Government or any organization and those in the service of this University should necessarily apply through proper channel. An advance copy should reach the Registrar on or before the aforesaid prescribed date.

If considered necessary by the University the candidates shall have to appear for personal interview in this University's office at Akola at the candidates own cost.

Krishinagar,

Akola

S.P. Kokate  
Dated 17th April, 1975  
REGISTRAR

**PUNJABRAO KRISHI VIDYAPEETH,  
P.O. KRISHINAGAR, AKOLA,  
(MAHARASHTRA)**

Advertisement No. BCA/0675(1)

Applications in the prescribed forms are invited on or before the 31st May, 1975 for the following temporary posts in the Operational Research Projects Wardha/Amravati in the pay scale mentioned against those posts under the University.

Subject matter specialist in :—

1. Entomology	Rs. 400-40-800-50-950/-
2. Animal Husbandry	
3. Horticulture	
4. Social Science	
5. Animal Science	
6. Plant Protection	
7. Junior Statistician	
8. Animal Health & Hygiene	

Senior Technical Assistant in :—

9. Agronomy	Rs. 325-15-575
10. Plant Pathology	
11. Animal Husbandry & Dairying.	
12. Agricultural Assistant	

## 2. QUALIFICATIONS

(I) For the posts at serial Nos. 1 to 4 above.

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course-Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in the subject concerned) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research and with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(II) For the post at serial No. 5 above :—

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Animal Husbandry and Dairying) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research and with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(III) For the post at serial No. 6 above :—

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Plant Pathology) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research and with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(IV) For the post at serial No. 7 above :—

(a) Bachelor's degree in Science of any University or in Agriculture or in Veterinary Science of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Science with Statistics of any University/Institute with papers only or with papers and research and with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(V) For the post at serial No. 8 above :—

(a) Bachelor's degree in Veterinary Science of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Veterinary Science (in Medicine) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research only with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(VI) For the post at serial No. 9 above :—

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Agronomy) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research and with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(VII) For the post at serial No. 10 above :—

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Plant Pathology) of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with papers only or with papers and research and with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(VIII) For the post at serial No. 11 above :—

(a) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

AND

(b) Master's degree in Agriculture (in Animal Husbandry and Dairying) of this University or a degree of any other University/Institute recognised as such by this University as equivalent

thereto with papers only or with papers and research and with atleast 45% marks in the aggregate or with research only or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

(IX) For the post at serial No. 12 above :—

Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 40% marks in the aggregate or with the Course Credit and Internal Evaluation System of Education (Semester or Trimester).

3. Appointments to all the posts at serial Nos. 1 to 12 (both inclusive) above shall be made by nomination by selection on a tenure and contract basis till 31-3-79 or till the expiry of the Project/Scheme whichever is earlier.

#### 4. AGE

Not more than 30 years as on 31-5-75. Relaxation in age is allowed to the employees of this or any other University in India and of Central and State Government, Scheduled Castes/Tribes and other Backward classes to the extent permissible under rules.

5. Application forms can be obtained from the Assistant Registrar (Establishment) Punjabrao Krishi Vidyapeeth, P.O. Krishnagar, District: Akola, Maharashtra, on payment of an amount of Rs. two (Rs. 2/-) as an application form fee for each form to be made separately. Requests for a form/forms for each post to be made separately and should be accompanied by a self addressed envelope of the size of atleast 23 cms x 10 cms bearing postage stamps worth 45 paise. Applications in the prescribed forms complete in all respects together with an amount of Rupees Eight (Rs. 8/-) as registration fee for each post separately should reach the Registrar, Punjabrao Krishi Vidyapeeth, P.O. Krishnagar, District, Akola, Maharashtra, on or before the 31-5-1975. Payment of all fees must necessarily be made through Crossed Indian Postal Orders payable to the Comptroller, Punjabrao Krishi Vidyapeeth, P.O. Krishnagar, District, Akola (Maharashtra). Incomplete applications and those received after the prescribed date shall not be considered and no correspondence thereon will be entertained.

6. Candidates already in service of Central/State Government or any Organisation and those in the service of this University should necessarily apply through proper channel. An advance copy should reach the Registrar, on or before the aforesaid prescribed date.

7. If considered necessary by the University the candidate shall have to appear for personal interview in this University's office at Akola at the candidate's own cost.

Krishnagar,  
Akola.

Dated : 9th April, 1975

S.P. Kokate  
REGISTRAR

## SOUTH GUJARAT UNIVERSITY

APPLICATIONS are invited for the posts of (1) Reader in Statistics (2) Lecturer in Applied Statistics (Econometrics) (3) Case Analyst in the Scale of (1) Rs. 700-50-1250 and (2) (3) Rs. 400-40-800-50-950 respectively with usual allowances.

### Minimum Qualifications

The minimum qualifications for the posts are as under:

(1) **Reader in Statistics**:—At least Second Class Masters' Degree or a Ph.D. Degree in the subject AND Three years experience of teaching Post Graduate Classes and some independent published research work or some published work of merit.

(2) **Lecturer in Applied Statistics (Econometrics)**:

(a) Second Class Master's Degree in Economics with specialisation in Econometrics.

And

Five years teaching experience in the Degree Classes or two years teaching experience in the Post Graduate Degree Classes or some published research or some published work of merit.

Or

(b) Ph.D. Degree in the subject.

(3) **Case Analyst**: (i) M.B.A. Degree of any Indian or Foreign University in atleast Second Class or equivalent grade.

Or

(ii) A high grade point Post Graduate Diploma in Business Administration of the Indian Institute of Management, Ahmedabad or the Indian Institute of Management, Calcutta.

Or

(iii) Atleast Second Class Masters' Degree in any of the subjects usually taught in Post Graduate Programmes in Business and Industrial Management AND Orientation in the overall field of Management received in programmes like the Graduation Programme (ICAME) of Stanford University or the International teachers Programme of the Harvard University or some other similar programme.

Preference will be given to one who has a good background of Economics and also has taken his M.B.A. or some other equivalent degree with specialisation in Marketing Management. Possession of some business experience, consultancy experience, or experience of case writing or research project writing or research project will be considered as an additional qualification.

### General

Candidates not possessing knowledge of Gujarati, if appointed, will be required to acquire working knowledge of Gujarati within the period of probation, which shall be of two years. Selected candidates will be required to join at short notice.

Eight copies of the application should be submitted on the prescribed form, which can be had from the undersigned on payment of Re. 1/- in cash or by Postal Order with a self addressed envelope of 23 cm x 13 cm size, duly stamped with 0.50 Paise. The last date for receipt of the application is 7-6-1975.

Surat. G.A. Desai  
Date 2-5-1975 REGISTRAR

## UNIVERSITY OF SAUGAR

Advertisement No. R. 175

Applications on the prescribed form obtainable from the undersigned accompanied by a self-addressed stamped envelope and a postal order of Rs. 5/- for each post are invited for the following teaching posts in the Department of Pharmaceutical Sciences as to reach the undersigned by 31st May, 1975.

I. Seven Posts of Asstt. Professors (Salary scale Rs. 400-40-800-50-950).

### QUALIFICATIONS:

(a) A first or second class Master's degree of an Indian University or equivalent qualification of a foreign University in the subject concerned.

(b) A research degree in the subject or experience of teaching degree and/or post-graduate classes will be a desirable qualification.

(c) Knowledge of Hindi will be desirable.

### SPECIALIZATION:

(i) Two posts (Permanent) — one in Pharmaceutics & the other in any branch of Pharm. Sciences with teaching experience in Pharm. Engg.

(Continued on page 23)

## THESES OF THE MONTH

### PHYSICAL SCIENCES

#### Mathematics

1. Agrawal, Suresh Chandra. Mathematical programming in integers. Meerut University.
2. Bhatia, Devinder Kaur. Investigations in mathematical programming. University of Delhi.
3. Bhushnornath, Subhas Sangayya. Exceptional values of meromorphic functions. Karnatak University.
4. Gupta, Ved Prakash. A study of subharmonic and integral functions. Meerut University.
5. Harish Chandra. Laminar forced convection of fluid considering the effect of Rayleigh number. Meerut University.
6. Keshava Murthy, G.N. Studies in multiplier problem. University of Madras.
7. Ramakrishnan, T.R. Numerical evaluation of cauchy type singular integrals. I.I.T., Delhi.
8. Sunder Lal. Some problems in proximity spaces. Meerut University.
9. Uday Narayan Singh. Contributions to the theory of quasi normed linear spaces and differential manifolds. Magadh University.
10. Vaid, Baldev Kumar. Solutions of various boundary value problems involving two objects by an integral equation technique. University of Delhi.

#### Physics

1. Bansal, Ravinder Mohan. Effect of collective and molecular modes on the thermalization and diffusion of neutrons in light and heavy water. University of Delhi.
2. Chandra Bhushan. Some investigations in internal ballistics. Meerut University.
3. Joglekar, Arun Vasantrao. Vapour deposited thin films of bismuth and antimony. University of Poona.
4. Krishnamma, B. The thermal and electrical conductivities of some transition metals and their alloys. I.I.T., Delhi.
5. Mitra, Arjana. Studies on optical and other properties of some semiconducting films. University of Poona.
6. Narasimha Rao, Chirala. Studies on special shapes of some first forbidden beta transitions. Andhra University.
7. Pal, Bishnu Pada. High field interaction in semiconductors and dielectrics. I.I.T., Delhi.
8. Sadana, Devendra Kumar. Phosphorus diffusion in gallium arsenide. I.I.T., Delhi.
9. Sriramamurthi, Kakarla. Development of the experimental technique and (nuclear) reaction studies in some rare earth nuclei. Andhra University.
10. Takwale, Muralidhar Gowind. The crystal and molecular structures of P-toluic acid and 2-nitro-4-methyl benzoic acid by X-ray diffraction. University of Poona.
11. Yadav, Ram Pratap Singh. Some reliability models incorporating environmental conditions. Meerut University.

#### Chemistry

1. Ariya, Om Prakash. Studies in kinetics of oxidation of hydroxy carboxylic acids by chloramine T. Indore University.
2. Chaudhry, Subhash Chander. Nature of the complexes of benzoin and substituted benzoin with lewis acids. Himachal Pradesh University.
3. Desai, K.R. Optical activity and reaction mechanism. Gujarat University.
4. Gadaginamath, Gurusiddaayya Shivayya. Synthetic studies in the indole field. Karnatak University.
5. Gurumurthy Chetty, Konkimala. Effects of ionising radiations on nucleic acids metabolism. University of Poona.
6. Harindra Singh. Synthesis of potential anthelmintics. Meerut University.

7. Katoch, Dhruvendar Singh. Solution chemistry in acetic anhydride solvent. Himachal Pradesh University.
8. Kulkarni, Ashok Krishna. Studies in polyisoprenoids and related compounds. University of Poona.
9. Madan, Ratan Lal. Studies in surface properties of metal oxides. Meerut University.
10. Maheshwari, A.K. The effect of some surface active substances on polarographic maxima of certain metal ions and study of some metal complexes in aqueous and aqueous organic solvent mixtures. University of Rajasthan.
11. Maheshwari, Suresh Chandra. Studies of complex compounds of transition and inner transition elements with schiff bases. Meerut University.
12. Parkar, Meeraaben Shankar. Nitration of unsaturated steroids and related studies. University of Poona.
13. Patel, J.C. Heterocyclic compounds of nitrogen and sulphur. Gujarat University.
14. Phatak, Gopal Mahadeo. Studies on complexes of chromium (III): Catalytic effects in the reactions of chromium 3+ with some aminopolycarboxylic acids. University of Poona.
15. Prakash Bahadur. Physical properties of calcium soaps and their role in emulsion stability. Meerut University.
16. Purohit, Muralidhar Gurachar. Studies in the indole field. Karnatak University.
17. Ray, Sudhin Kumar. Kinetics of bidentate ligand substitution in geometrical isomers of octahedral cobalt (III) complexes. University of Burdwan.
18. Rustagi, Subhash Chander. Structure and thermal decomposition of some transition metal complexes of alkylamines and schiff bases derived from alkylamines. I.I.T., Delhi.
19. Satya Pal Singh. Physico-chemical studies of oxovanadium (IV) complexes. Meerut University.
20. Saxena, Meera. Studies in the reactions of ketonic reagents 1, 3, 5 tricarbonyl compounds and corresponding pyrones. Indore University.
21. Sethi, D.C. Studies on metal chelates of hydroxyl-amine derivatives. University of Rajasthan.
22. Shambhu Sharat Singh. Studies on some physico-chemical aspects of selected dispersed liquid systems. Bhagalpur University.
23. Sharai, Ashutosh Kumar. Studies on coordination compounds of cobalt (II), nickel (II) and copper (II) succinates with some heterocyclic bases. Magadh University.
24. Sharma, Kartash Narain. Studies on the octacyano gen complexes of the transition metals of group VI. Meerut University.
25. Singhal, R.K. Synthesis of diazepine related substances. University of Rajasthan.
26. Sukhvir Singh. Studies on potential antitumour agents. Meerut University.
27. Tholia, M.K. Studies in pesticides. University of Rajasthan.
28. Vaidya, Shrinivas Viravak. Syntheses and evaluation of compounds for polymers (PVC) using indigenous raw materials. University of Poona.
29. Vijay Lakshmi. Studies on the chemical constituents of the bark and leaves of Symplocos crataegoides. Meerut University.
30. Vora, D.N. Some reaction hyponitrites and related substances. Gujarat University.

#### Earth Sciences

1. V. K. Singh. A study of tungsten mineralisation at Chhendapathar, District Bankura, West Bengal. I.S.M. Dhanbad.

## **Engineering & Technology**

1. Basu, Nilmoni. Studies on treatment of steel plant waste. University of Burdwan.
2. Devdas Shetty. Design and studies of fluidic or/nor elements and their application in the design and development of a numerically controlled coordinateograph. I.I.T., Delhi.
3. Kapur, Arjun Dev. Vibration response of multilayer beams subjected to shock excitation. I.I.T., Delhi.
4. Muslim Taj Ahmed. Active RC synthesis of single and multivariable network functions using operational amplifiers. I.I.T., Delhi.
5. Sen, Pradeep Kumar. Mechanisms of turbulence. I.I.T., Delhi.

## **BIOLOGICAL SCIENCES**

### **Biology**

- Ragothaman, G. Studies on Indian diatoms. University of Madras.

### **Biochemistry**

- Chauhan, Bhag Mal. Studies in brain composition of rats at different stages of growth in relation to protein colonic malnutrition. Haryana Agricultural University.

### **Botany**

1. Gupta, Mohini Devi. Morphological studies in inflorescences. Meerut University.
2. Gupta, Rani. Cytogenetic studies in the genus crotalaria (Linn.). Meerut University.
3. Joshi, Sahib Soroop. Studies on proteins of some Indian plants. Ravishankar University.
4. Mhasker, Dhananjaya Narahar. Studies into some Indian ascomycetes and fungi imperfecti. University of Poona.
5. Mukherjee, Asok Kumar. Abscission process in coleus, Coleus blumei (Benth) debaled petioles with special reference to ethylene. University of Burdwan.
6. Pathan, T.S. Histochemical studies of enzymatic activities as well as ascorbic acid, nucleic acids and basic proteins during vegetative and reproductive differentiation in some cereals. Gujarat University.
7. Surendra Pal. Morphological and ontogenetic studies in Lauraceae. Meerut University.

### **Zoology**

1. Appa Rao, Thota. Proximate chemical composition of some clupeoid fishes of Waltair Coast. Andhra University.
2. Dean, Robson Alfred. The functional morphology and histology of the glands associated with the digestive system in certain teleosts of U.P. with special reference to the estimation of liver-oils. Meerut University.
3. George, John V. Studies on the mechanism of cell adhesion. University of Delhi.
4. Goyal, R.P. Histophysiological and histochemical studies on the testes and the associated male accessory glands of certain mammals. University of Rajasthan.
5. Gupta, Gayatri. Hormonal regulation of epididymal function in the albino rat. University of Delhi.
6. Kaushab, Shyam Kumar Singh. Studies on the digestive physiology of three fresh water fishes namely Wallago attu (B. & Schn.), Clarias batrachus (Linn.) and Labeo rohita (Ham.). Meerut University.
7. Kulkarni, Sudhakar Mangesh. Biology trombiculid mites (acarina : trombiculidae) with special reference to Leptotrombidium (Leptotrombidium) deliense (Walch, 1922). University of Poona.
8. Mahabir Singh. Effect of some insecticides on the alimentary system of Chrotogonus trechipterus (Blanchard) pyrgomorphidae, orthoptera, an insect of economic importance. Meerut University.
9. Mathur, Jagdish Kumar. Studies on the development of the limbs in calotes versicolor. University of Poona.

10. Shukla, Gopi Rani. Studies on the pollution of Hindon River in relation to fish and fisheries. Meerut University.
11. Viney Kumar Singh. Studies on the population genetics of drosophila ananasae. Bhagalpur University.

### **Agriculture**

1. Arvind Kumar. Water and nitrogen requirements of rice. Meerut University.
2. Jain, Ravinder Pataap. Genetics of certain yield and physio-morphological characters and their interrelationship in bread wheat, *Triticum aestivum* (L.). Meerut University.
3. Raj Pal. Transport and accumulation of ions in soil. Haryana Agricultural University.

### **Veterinary Science**

- Velhankar, Dattatreya Purushottam. Growth, puberty and sexual maturity in gilt heifers consequential to different dietary energy levels with critical studies on blood glucose, copper, cholesterol and haemoglobin polymorphism. Konkan Krishi Vidyapeeth.

## **SOCIAL SCIENCES**

### **Sociology**

1. Ahluwalia Aneeta. Some aspects of the social system of an Indian hospital. University of Delhi.
2. Badgaiyan, Shyam Dhar. A sociological study of the effects of industrialization of Bhilai on the surrounding villages. University of Delhi.
3. Behere, Suman Purushottam. Urbanization and status equilibration process in an outcaste group in Bombay. University of Poona.

### **Political Science**

1. Garg, Gulshan Kumar. Social and political ideas of George Bernard Shaw. Meerut University.
2. Gurwar Singh. The concept of democracy and its growth in modern Indian political thought. Meerut University.
3. Narendra Kumar. Uttar Pradesh mein ziladish ka adhyayan. Zila Bulandshahr kai sandarbh mein. Meerut University.
4. Verma, Ganesh Prasad. Role of opposition in the Bihar legislature. Magadh University.

### **Economics**

1. Arumugam, M. Socialist thought in India with particular reference to the contribution of Lohia. University of Poona.
2. Bansal, Rajendra Kumar. Possibilities of economic development in District Gurgaon. Meerut University.
3. Khurana, Darshan Singh. Growth of socialistic economy in India. Meerut University.
4. Krishnarao, B. Economic trends in Indian rural credit cooperation 1951-66. University of Madras.
5. Pant, Devi Datt. Public debt in India with special reference to plan period. Meerut University.
6. Shrinath Singh. Modernization of agriculture in a traditionally backward agricultural area: A case study in Eastern Uttar Pradesh. Sardar Patel University.
7. Urmil Singh. Possibilities of development of cottage industries in Western Uttar Pradesh. Meerut University.

### **Law**

1. Nagabhushanam, Hari. A decade of parliamentary control of public undertakings in India. University of Poona.

### **Education**

1. Halbe, Shreeram Bhagwan. An investigation into the physical efficiency of the pupils in the high schools of Jalgaon. University of Poona.
2. Karmyogi, Ram Prakash. An investigation into the problems of educational administration in Madhya Pradesh from 1947-68 with reference to secondary education. Ravishankar University.

3. Patel, Vinodchandra Bechardas. Educational thoughts and practices in Gujarat during the British rule (1820-1920) as reflected in bibliographical forms of Gujarati literature. M.S. University of Baroda.

4. Patel, Vishnuprasad Ambalal. Impact of the panchayati raj on the administration of primary education in Mehsana District. M.S. University of Baroda.

5. Sharma, Manorama. A study of correlates of socio-metric status in high school classes. Meerut University.

6. Sharma, Ratan Lal. An investigation into the personal and sex interests of school going rural and urban adolescent boys of Hadoti Region. Sardar Patel University.

7. Shelat, Neela Arvind. Study of organisational climate, teacher morale and pupil motivation towards institutions in secondary schools of Baroda District. M.S. University of Baroda.

#### Commerce

Tandon, J.K. Economic relations between India and West Germany since 1951. University of Rajasthan.

### HUMANITIES

#### Philosophy

1. Bharadwaja, Shashi. G.E. Moore's common sense philosophy. University of Delhi.

2. Dharam Veer. The social philosophy of M.N. Roy. Meerut University.

3. Dwivedi, Rajendra Narayan. A critical and cultural study of Amarakosa and trikandasesa, two major works of Buddhist lexicographers. University of Delhi.

4. Kambi, Veerabasavayya Sivalingayya. Satsthala in virasaivism : A philosophical study. Karnatak University.

5. Kaniyaparambil, James. Bibliocal-Upanishadic philosophy of life for the modern man. University of Poona.

6. Rama Rao, Kanuri. A critical evaluation of Bertrand Russell's conception of mathematical logic. Meerut University.

#### Linguistics

1. Sankeethamony, Dhasiah Karunakaradas. The descriptive grammar of nagercoil Christian Tamil dialect. University of Poona.

#### Literature

##### English

1. Ganpat Rai. Thomas Hardy's realism with special reference to the disintegration of the English traditional rural society. Meerut University.

2. Paul, Sham Lal. Villains of Shakespeare : Their identity and moral challenge. Meerut University.

3. Roy, Virendra Kumar. Quest for belief in the poetry and plays of T.S. Eliot. Meerut University.

4. Sharma, Jai Prakash. Raja Rao as a novelist and short story writer. Meerut University.

##### Sanskrit

1. Lowe, Ramesh Kumar. The language of the taittiriya brahma. Meerut University.

2. Sharma, Devi Chandra. Anargh Raghava aivam Prasann Raghava ka tulnatmak adhyayan. Meerut University.

3. Tripathi, Tirth Raj. A study of Padmanjari. University of Delhi.

##### Hindi

1. Arya, Rahtoo Lal. Hindi ka swatantryottar kavya mein abhijyanit naik moolya. Meerut University.

2. Bhaskar, Vimla. Nimark sampradaya ke sandarbh mein Hariviyas Deo ka vishesh adhyayan : Siddhant aur sahitya. Meerut University.

3. Bhatta, Timmanna Ramachandra. A comparative study of Pant and Bendre as poets. Karnatak University.

4. Chaturvedi, Kusum. Adhunik Hindi sandarbh sahitya ka vivechanatmak Adhyayan. Meerut University.

5. Dinesh Chandra. Chhayavadi kavya mein Shrinagar varnam. Meerut University.

6. Goyal, Kamla Devi. Angrazi natkon ke Hindi anuvad. Meerut University.

7. Jain, Kalpana. Raj Kamal Choudhary shailee tatvik vivechan. University of Rajasthan.

8. Kamal Kaur. Adhunik Hindi mein prayukt tadbhava shabdon ka dhvanyatmak adhyayan. Meerut University.

9. Kamat, Ashok Prabhakar. Maharashtra ke nathpandhi kavyon ka Hindi kavya. University of Poona.

10. Khunteta, Durgawati. Sufi prem gathaon mein nari latva sawroop aur satotra. University of Rajasthan.

11. Misra, Dhan Prakash. Vakrokti siddhant ke aalok mein bhramargeet kavya ka vishleshan. Meerut University.

12. Naresh Kumar. Vasudev Sharan Agrawal : Vyaktitiva evam kritiv. Meerut University.

13. Panchal, Parma Nand. Dakhini Hindi ke kavyon ke paribhashik shabdavali ka adhyayan. Meerut University.

14. Roop Chand. Navyug kee Hindi kavita ka kavya shashtra. Meerut University.

15. Saxena, Virendra. Samkaleen Hindi kahani mein chitrit kaam sambandhon ke yatharth ka paathkecya vishleshan : Ek mahanagar Delhi, ek nagar Bareilly tatha ek qasba Bisauli ke paathkon ke aadhar per satven dashak kee kaam sambandhi Hindi kahaniyon ka vivechan. Meerut University.

16. Shakuntala. Ashtachhap ke kavyon dwara prayukt upman yojna ka vivechanatmak adhyayan. Meerut University.

17. Sharma, Asha Rani. Chhayavadi kavya mein trasad tatva. Meerut University.

18. Sharma, Balak Ram. 'Ageya' kee Gadhyा bhasha ka shailee vyagyanik adhyayan. Meerut University.

19. Sharma, Puran Lal. Hindi upanyason mein Harijan Samasya. Meerut University.

20. Sharma, Ramesh Chandra. Vakrokti siddhant ka privesh mein ritikaleen ritikavya ka adhyayan. Meerut University.

21. Sharma, Sumitra. Swatantryottar Hindi upanyas sahitya mein jiwan darshan, 1947 se 1967 tak. Meerut University.

22. Sharma, Suraj Pal. Hindi ke sandarbh sahitya ka vivechanatmak adhyayan. Meerut University.

23. Snatak, Surendra Pal. Kalidasi tatha Prasad kee natyakala ka tulnatmak adhyayan. Meerut University.

24. Srivastava, Harimohan Prasad. Bhartiya sangeet aur Sursagar. University of Poona.

25. Tomar, Saroj. Zila Meerut ke tehsil Baghpur kee gramodyog sambandhi shabdavali ka adhyayan. Meerut University.

26. Verma, Man Singh. Nayee kavita mein puratan sutro ka adhyayan. Meerut University.

27. Vishnoi, Indumati. Biswin shatabdi ke Amriti aur Hindi ke Premchandrottar upanyason kee pravertiyon ka tulnatmak adhyayan. Meerut University.

##### Tamil

1. Alexander, Grace. A critical study of women characters in Kambaramayanam. University of Madras.

##### Telugu

Venkata Raju, Penumetha. Mahabharatamu : Upakhyana tatwamu. Andhra University.

##### Fine Arts

1. Misra, Swaran Lata. Ajanta bhitti chitron mein bhava vyanjana. Meerut University.

2. Rastogi, Madhurima. Rajasthani chitra kala mein prakriti chitran. Meerut University.

##### History

1. Ganga Prasad. Dhanpal and his times : A socio-cultural study based upon his works. Meerut University.

2. Khan, Mohammad Ishaq. Srinagar 1846-1947 socio-cultural change. University of Kashmir.

3. Misra, Ram Gopal. Indian resistance to early Muslim invaders up to 1206 A.D. Meerut University.

4. Poonmas, Phra Maha Poon. A critical survey of early Buddhist monastic life. Magadh University.

5. Verma, Ganeshi Lal. Party politics in the United Provinces 1905-1919. University of Delhi.

##### Geography

1. Negi, Dalpat Singh. Functional analysis and hierarchy of service centres in District Bijnor. Meerut University.

2. Sharma, Harvir. A geostrategic appraisal of the Kashmir Valley. Meerut University.

# CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from Periodicals received in AIU Library during March-April 1975

## EDUCATIONAL PHILOSOPHY

Jatti, B.D. "Higher education must inculcate spirit of service". *University News* 13(3); Mar 75 : 18.

Mahajan, G.S. "Universities must be service-oriented". *University News* 13(3); Mar 75 : 17-18.

Minoque, Kenneth. "Real value of ivory towers". *Times Higher Education Supplement* (173); 7 Feb 75 : 5.

Minoque, Kenneth. "Who gains from the Bhutto fiasco?" *Times Higher Education Supplement* (177); 7 Mar 75 : 5.

Zuckerman, Michael. "Education for jobs or for inquisitiveness?" *Chronicle of Higher Education* 9(3); 7 Oct 74 : 20.

## EDUCATIONAL PSYCHOLOGY

Ortony, Andrew. "Opinions divided on whether artificial minds need matter". *Times Higher Education Supplement* (178); 14 Mar 75 : 9.

Ortony, Andrew. "TV sees for computers with steel fingers". *Times Higher Education Supplement* (177); 7 Mar 75 : 9.

## EDUCATIONAL SOCIOLOGY

Carrier, Herve. "Role of the university in the new society". *New Frontiers in Education* 5(1); Jan 75 : 1-12.

Clarke, Peter and Cook, Ian. "Mapping out a sense of community". *Times Higher Education Supplement* (177); 7 Mar 75 : 6.

Dickson, David. "Helping hand that stretches round the globe". *Times Higher Education Supplement* (178); 14 Mar 75 : 8.

"Do it yourself sit-in guide". *Times Higher Education Supplement* (177); 7 Mar 75 : 7.

Gibb, Frances. "Students 1975. After the confrontation years are they rebels without a cause?" *Times Higher Education Supplement* (173); 7 Feb 75 : 7.

Moorman, Paul. "Great obstacle to equal opportunity is inherited wealth". *Times Higher Education Supplement* (171); 24 Jan 75 : 9.

Pichai, R. and Ramaraju, A.R. "Role of students and national progress". *University News* 13(3); Mar 75 : 4-5.

Verstraeten, A. "College as an academic community". *New Frontiers in Education* 5(1); Jan 75 : 52-67.

## EDUCATIONAL ADMINISTRATION

Crewe, Ivor. "Alternatives to government by community". *Times Higher Education Supplements* (178); 14 Mar 75 : 5.

Macarthur, Brian. "How a restyled prospectus attracted sixth formers in their thousands". *Times Higher Education Supplement* (177); 7 Mar 75 : 8.

Rao, M.R. and Raja, V.B. "Administration of university-affiliated college systems." *New Frontiers in Education* 5(1); Jan 75 : 13-24.

## CURRICULUM

Milward, A.S. and Studdertkemedy, Gerald. "Crossing subject boundaries". *Times Higher Education Supplement* (142); 5 July 74 : 14.

## RESEARCH

"Open university and research". (Editorial). *Times Higher Education Supplement* (177); 7 Mar 75 : 14.

## EVALUATION

Walker, David. "Scanner for quick marks tally rouses examiners' interest". *Times Higher Education Supplement* (178); 14 Mar 75 : 4.

## ECONOMICS OF EDUCATION

Prentice, William. "Estimating the financial value of a good degree". *Times Higher Education Supplement* (173); 7 Feb 75 : 9.

## PROFESSIONAL EDUCATION

Coombs, Philip H. "Where should agricultural education go from here". *Indian Journal of Adult Education* 35(8); Aug 74 : 14-18.

Jaiswal, N.K. and Arya, H.P.S. "Problems in diffusion of agricultural innovations and functional education programmes". *Indian Journal of Adult Education* 35(8); Aug 74 : 19-26.

Kogut, Margot. "Doctors' dilemma: Much to know, little time to learn". *Times Higher Education Supplement* (178); 14 Mar 75 : 11.

Snider, John C. "Nontraditional study programme in agriculture". *Indian Journal of Adult Education* 35(8); Aug 74 : 27-8.

Swaminathan, M.S. "Social and educational requirements of new technology in agriculture". *Indian Journal of Adult Education* 35(8); Aug 74 : 4-13.

## ADULT EDUCATION

Adisesiah, Malcolm S. "Raising literacy standards, what standards and for whom". *Indian Journal of Adult Education* 35(9); Sept 74 : 45-7.

"Asian-South Pacific Centre for Adult and Continuing Education: Report of a workshop". *Indian Journal of Adult Education* 35(7); July 74 : 16-21.

"International instrument on the development of adult education". *Indian Journal of Adult Education* 35(7); July 74 : 3-15.

Matheikal, J.T. "New way to solve an old problem: An experiment in adult literacy". *New Frontiers in Education* 5(1); Jan 75 : 68-74.

## COMPARATIVE EDUCATION AND COUNTRY STUDIES

Ashby, Eric. "Glimpse of a brighter but less glamorous future". *Times Higher Education Supplement* (173); 7 Feb 75 : 15.

"Drift of change". *Times Higher Education Supplement* (173); 7 Feb 75 : i-iv.

Mitchison, Naomi. "Triage could be the catchword of the 1980s". *Times Higher Education Supplement* (177); 7 Mar 75 : 11.

"Snobbish obsessions with university status". *Times Higher Education Supplement* (177); 7 Mar 75 : 15.



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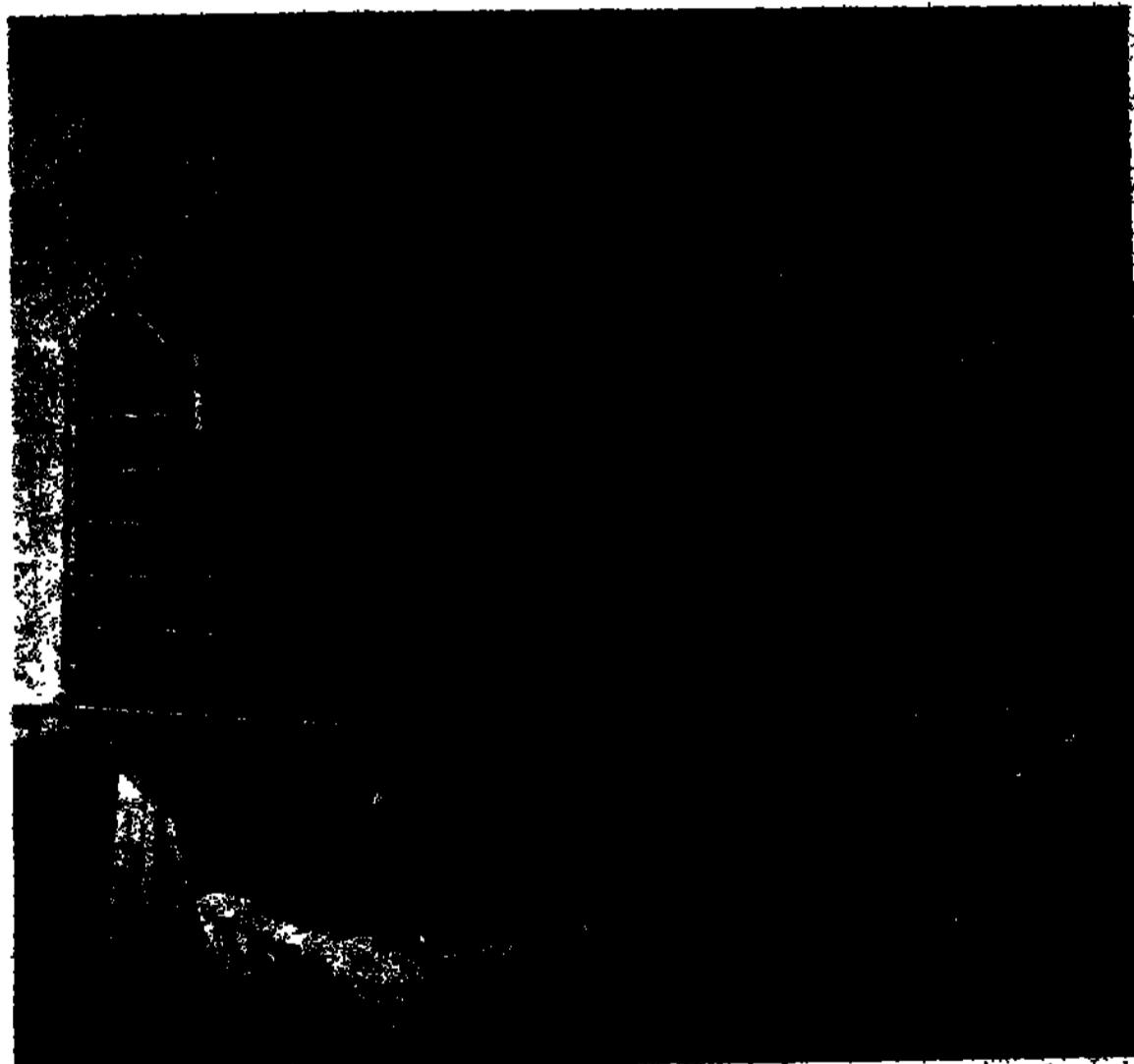


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**News**

**DEVELOPMENT OF HIGHER  
EDUCATION IN INDIA**

**A CHRONICLE OF HIGHER EDUCATION & RESEARCH \* JUNE 1975 Re. 1.25**



**'Aryabhata' the first Indian Satellite launched from a Soviet Cosmodrom on April 19, 1975. It weighs 360 Kg and measures 1.6 metres from end to end.**

### NOTIFICATION NO. 3

APPLICATIONS in the prescribed form invited for the following posts in University Services.

Faculty of Technology and Engineering

Professor of Chemical Engineering

Faculty of Arts

Professor of Gujarati

Faculty of Science

Professor of Chemistry

Polytechnic

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- (ii) Shall posses a first or second class Master's degree (with at least 48% marks) in the subject.
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- (iv) Shall be engaged in active research work.
- (v) Shall have experience in guiding research work.

- (vi) Shall have teaching experience in a College or a University teaching Department for at least 10 years in the subject of which at least three years shall be in postgraduate classes.

(i) The candidate shall have a first or second class Master's Degree (with at least 48% marks) in the subject.

(ii) A doctorate Degree or published work of equivalent standard.

(iii) Teaching experience in a College or a University Department for at least eight years in the subject of which two years preferably be in postgraduate classes.

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Persons in Government service selected for appointment shall be allowed leave salary and pension contribution for one year only if they wish to retain their lien under Government.

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Applications from persons in India should be made on the prescribed forms obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 x 10 cm size. Applications should be accompanied by a postal order for Rs. 7.50 (Rs. 1.87 for Scheduled Castes/tribe candidates).

Persons abroad may apply on plain paper (three copies) including an account of their academic and professional records and reprints of publications, fields of specialization etc. They should also give names of atleast three persons who are intimately acquainted with their academic activities.

All applications should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016 U.P. latest by 15-6-75.

# UNIVERSITY NEWS

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## 4. Monthly Chronicle of Higher Education

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

Editor ANJNI KUMAR

# Seminar on Varsity Sports

A Seminar on University Sports and a Conference of University Directors of Physical Education were concurrently held at the Gujarat University, Ahmedabad on 9th and 10th May, 1975. 63 delegates representing various universities/technical institutes in the country attended The Seminar and the Conference were inaugurated by Shri H.C. Sarin, Adviser to the Gujarat Governor. Shri I.J. Patel, President of the Association of Indian Universities and the Vice-Chancellor of the Gujarat University, presided. Shri Sarin, in his inaugural address, emphasised the need to make maximum use of the available facilities particularly in view of the present economic conditions in the country. Earlier, Shri I.J. Patel welcomed the Chief Guest and the delegates. In his welcome address, he highlighted the importance of "motivation" in games and sports.

The following topics connected with the various aspects of university sports were projected for discussion.

1. Problems of University Sports;
2. Organisation & Administration of University Sports.
3. Financing & Planning of University Sports.

In the plenary session following the inaugural session, the papers contributed by various delegates were read out followed by discussion. Thereafter, the delegates were split up into three groups, one each corresponding to the aforesaid topics. Each group deliberated to the depth on the topic assigned to it.

Recommendations made by the Seminar as a result of discussion on the group reports held in another plenary session in the forenoon of the concluding day are briefly given below.

1. The recommendations contained in the Deshmukh Committee Report be implemented.
2. A core programme of physical education may be evolved which should be compulsory for three days a week for all the universities at the undergraduate level; and the rest three days may be utilised for participation in the other three streams i.e. NCC, NSO and NSS. The outstanding sportsmen emerging through this process may be taken care of in a specialised manner.
3. The local and national available facilities and resources should be put to a maximum use; and where facilities do not exist at present, UGC and the Ministry of Education & SW may be requested to come for help.
4. There should be a uniform organisational pattern with regard to the set-up of departments of physical education and sports committees.

(Continued on Page 5)

# Who will do baby-sitting?

AMRIK SINGH

WHY do students join colleges and universities? Is it in search of knowledge or in search of a certificate? To pose the question in this manner, as is usually done, is somewhat misleading. There is no real conflict between these two requirements. To assume that knowledge is something pure, disinterested and divorced from skills, is not right. At the same time to assume that skills can be acquired without adding to one's stock of knowledge is to over-simplify. The truth of the matter is that as one gains in skills one also gains in knowledge. While knowledge may not be particularly saleable commodity, skills certainly are. The more skilled one is the better price one fetches in the market. That is why, ideally speaking, those who have the inclination and the capacity do their best to acquire whatever skills they can.

Yet certification is very important. Without a degree how are other people to know that one has gone through a certain course of training and acquaint those skills which one is expected to acquire in the course of one's training? In certain situations there is a marked difference between what one was supposed to have acquired, and what one has actually acquired. This difference notwithstanding, most employers tend to place a large measure of reliance on what the certifying institutions--universities and colleges--are presumed to certify.

That is why when jobs are advertised, it is laid down, for instance, that the applicants must possess such and such degree and, more than that, must also have been placed at least in the second division. That in certain universities one can get second division at 45% and in other universities at 50%, does not seem to bother the employers. Nor are they particularly bothered by the fact that certain universities tend to give more first classes than third classes. The fact of the matter is that most people are too lazy to do without some kind of certification. When a duly constituted body certifies a particular individual to have passed a particular examination according to a specified norm that seems to satisfy most people. Instead of making their own judgment they find it easier to rely on somebody else's judgment.

Till the early 'fifties this system seemed to work somewhat satisfactorily. Then two things started to happen. One, the number of certifying agencies began to grow much more speedily than had happened in the past. Every year saw the establishment of a few new universities and they had the statutory right to grant certification. But more disconcerting than this factor was a second factor. The number of those joining colleges and universities began to grow by leaps and bounds. In 1950-51, for example, the number of students enrolled in higher education was less than 4 lakhs. In another twenty years it had gone beyond three million.

Each one of them was duly certified to have passed the examination that he claimed to have passed. Each one of them was therefore eligible to get the job for which he was an applicant. One additional factor that distorted the pattern still further was this. If for a particular job a simple graduate would do, there were scores of people who had done a master's degree. Sometimes they had qualifications in law and other related fields. As if that was not enough, some people had even done their doctorate. In plain words, we had the dual phenomenon of over-education and educated unemployment.

Nothing was more obvious in this situation than that some people should have started saying: we should de-link job from degree. A further refinement was introduced when it was said that selections for the superior jobs should be made soon after students finish school on the analogy of selecting young boys for the armed forces at the age of fifteen or sixteen. Indeed, it has been suggested that the IAS competition should be held immediately after students finish their school rather than after they finish college.

There is something persuasive about each one of these proposals. If and when implemented, they are likely to produce some quite definite results. The pressure on educational institutions would, without question, decline to some extent. Therefore as far as the universities are concerned they would begin to breathe a little more freely. All this and various other favourable consequences would ensue. Perhaps one can go so far as to say that not only would the process of declining standards in higher education be arrested, it may even be reversed.

All this sounds too good to be true, some people say. If it were so simple, why was this solution not thought of earlier? And indeed if it was thought of earlier, as there is evidence to show, why was it not implemented earlier? To ask this question is to discover that things are not so simple as they seem, that education and employment are deeply interlinked processes and that to seek to modify the educational process in a crucial sense without at the same time carrying out equally crucial changes in the system regulating the employment market, is to recommend a course of action which may produce some results for a couple of years but not for a longer span of time.

With every year that has gone by, the employment market has been shrinking. This is not a discount that till a couple of years ago some kind of economic growth was taking place every year. Even though the population was growing, the wealth of the country was growing too. That there were problems in regard to its distribution is a vital question but it need not be taken up just now. What is relevant to note is the

fact that despite all impediments a certain measure of growth was taking place. Since the beginning of the seventies even that has ground down to a halt.

Evidently, avenues for employment too have shrunk and, in consequence, unemployment is very much on the increase. Not many people seem to be aware of the fact that teaching is the largest profession in India today. Even at the university and college level the number of teachers already in position is more than 150,000. There is some evidence of declining enrolments in certain subjects and in certain parts of the country. To curb them further through a change of recruitment policy would mean a further reduction in the number of those who today are able to get employment as college and university teachers.

This, however, would be a very, very small part of the problem. The more urgent and indeed intractable part of the problem would be what would happen to those hundreds and thousands of young men and women who today crowd the classrooms and corridors of post-secondary educational institutions. Today those who have the ability and the means for joining a college do so without hesitation. That not each one of them would be able to get a job after a few years is a thought that gnaws them from within off and on but then for some time at least they feel they have something to do

This may not be exciting enough, nor rewarding enough but the college experience brings to them a certain measure of satisfaction. They learn something from their teachers and something from their fellow students. They get opportunities for sustained interaction with one another. There is also time for fun and frolic. On occasions it degenerates into acts of delinquency. But on the whole there is a permission kind of attitude to what young people do and therefore there is no real harm done. And all that it costs a student is a couple of hundred rupees in tuition fees and some additional funds for books, clothing, transport and other out-of-pocket expenses. The whole process is so designed as to admirably suit the offspring of the affluent and sometimes not so affluent.

To seek to change all this is to seek to engineer a transformation which will be both social and economic in its dimensions. The question to ask therefore is if enough thought has been given to all these implications and if the country is prepared for the new system that this changed pattern of education and employment will bring about. As far as one can judge, no thought has been given to any of these implications. Indeed when some people talk about the delinking of jobs from degrees, the suggestion in most cases seems to be that if such a delinking could be brought about the results would be almost miraculous.

On the contrary, they might turn out to be disastrous. While some of us working in the field of higher education like to believe that we are engaged in something noble and lofty, the ugly fact is that the majority of us are employed to do baby-sitting. The size of the operation—3½ million in higher education—and the not inconsiderable investment in it go to show

that the system of higher education is a part of a larger design and that nothing has been done in a fit of absent-mindedness.

To ask a few obvious questions, what if a substantial number of students were let loose in the streets? What if each one of them wanted a job? What if not finding a job they would become violent and destructive? None of these is an idle question. Nor is anyone of them irrelevant. It should not be difficult to see therefore why a network of 4,000 colleges and a hundred universities covers the length and the breadth of the whole country. Each one of these institutions engages the energies and attention of the majority of those who are too young and too unskilled to find a job and too wild and too destructive to be left on their own. In the absence of these educational institutions who, it may be asked, will do the babysitting.

For anyone to believe therefore that this vast edifice of higher education can be either partially dismantled or made even manageable without at the same time creating new avenues of employment and, indeed, a quickened rate of growth is to live in a world of slogans and not of reality. That sometimes these slogans are taken seriously only goes to show that we are fast beginning to lose even the distinction between illusion and reality. □

(Continued from Page 3)

5. The Ministry of Education & SW should give liberal treatment to the Association of Indian Universities as regards the financial assistance in comparison to the National Sports Federations.
6. The State Sports Councils should give suitable grants-in-aid to the universities within their jurisdiction for running their intra-murals, inter-collegiate, coaching programmes and meeting the inter-university tournament commitments.
7. The UGC may be approached for supporting and sponsoring the in-service training programmes at the university level.
8. Evaluation Committees may be set-up both at the university and inter-university level to evaluate the implementation of the programmes of physical education and sports.
9. Intra-mural programmes in the affiliated colleges and universities should be made more popular and these programmes should precede the university tournaments which, in turn, should precede the inter-university tournaments.
10. The Central Advisory Board of Physical Education and Recreation should be revived.
11. Due representation should be given to the physical education personnel in the universities on the All India Council of Sports and the SNIPES.

The Seminar and the Conference were organised by the Association of Indian Universities in collaboration with the Gujarat University aiming to discuss matters connected with promotion of University sports and find ways and means to improve upon the existing situation. □

# Development of Higher Education in India

N. V. R. L. N. RAO

TIME is an important factor in whatever we do. What was proved to be best at one time is obsolete at another time because of changing values and circumstances.

An honest analysis of places of higher learning reveal that the higher education in India is at cross roads. After independence there has been good expansion in the arena of higher education; but it is more of quantitative nature rather than qualitative. The environments in our universities is confused. Practically all the universities are faced with problems which are more of law and order than of academic. The aim of higher education is to solve problems of humanity rather than create problems to society. In educational organisations our reasoning faculties have to be nourished in order to allow our mind its freedom in the worlds of truth and our imagination and understanding of the world we live in. One should clearly distinguish between literacy and education, learning and wisdom.

## UNIVERSITIES

The higher education should be aimed at achieving excellence and should contribute towards social growth, cultural development and scientific and technological advancement. Ideally universities should be regarded as a pool of pure water where in thirsty man is allowed to drink as much as one needs or one can. The source of this water is the members of the faculty. To-day our real problem is that we are not able to prevent those who are not thirsty in coming to this pool.

The present day university set ups have been inherited from the British who established primarily for the sake of obtaining personnel for running the administration. But to-day what we see is that it is not possible to provide employment to all those who come out of the university portals. All said and done the phenomenal rush to educational institutions is for employment. We have linked up three Es, namely Education, Examinations and Employment. Examinations and Employment completely distorted the objectives of education. One is inclined to think that the Indian Universities are by and large only examining bodies. It is an open secret that the examinations have become unmanageable affair. It is rightly said that the pass-fail system in educational institutions has failed. It is also a fact that many problems in Indian Universities generate from examinations. This has been realised by University Grants Commission and many others. Changes in examination system are attempted in the light of

UGC's suggestions by universities at a very slow pace. What is needed is the drastic change in our outlook towards examinations so that the universities can divert their resources (men and money) for educational purposes more effectively.

The education commission points out that the average student in our universities brings with him the school attitude towards his studies. He expects to be treated like a school boy. Quite a few educators also plan university curricula accordingly.

## SOCIO-ECONOMIC CONDITIONS

Every walk of life in any country is subordinated to political system either directly or indirectly and education is no exception. As education is becoming less purposeful the student community is being exploited to maximum for other purposes than academic. Youth is the major force to be reckoned for effecting any changes in the society. Every organisation depends on youth for its success.

Many social ills of the day are not due to ignorance of those who are responsible for it but due to their wouldliwdom. Most men follow the pat of least resistance and act either willingly or under compelling circumstances thinking that whatever is of immediate advantage is good. By nature majority are not content with simple life specially in the modern civilization. They are ambitious, acquisitive, competitive, jealous. They soon tire of what they have and pine for what they have not. Self respecting educated are ignored or offered second rate positions.

The conduct of elder men in the society has a glaring effect on the morale of the youth. Most of the vital issues are decided in streets under emotions. Old traditions continue to deter the sociological developments and effect the youth considerably. Contradictory to our wishes the gulf between the rich and poor is getting wider.

Thus the facts of life contradict the learnings of the youth and quite often the educated land in bewilderment. Education has become an ornament instead of utility.

## WHAT TO DO ?

Essence of higher education is the search for ideas. Educated men have an obligation to society to focus their ideas in naked form. It may be wrong to call the places of higher learning as teaching centres.

They should be regarded as centres of learning and research where young and old have a chance of free discussions and exchange of ideas on matters concerning humanity. Higher education is being imparted to those who are aged and already developed likes and dislikes by the time they enter the universities. Therefore what the universities can do is to encourage right things in an individual by providing him necessary facilities by way of good faculty members and library etc. Any amount of compulsion is likely to be violated by both students and staff. Knowledge which is acquired under compulsion has no hold on the mind and heart. Faculty members should not be over loaded with routine teaching work as at present. If the teacher is interested in his task and student is interested in learning what is needed is proper and judicious encouragement. For this men in authority should guard the walls of the universities from entering uninterested personal into it.

As regards the examinations the principle "Those who teach should also examine" as suggested by the UGC should be accepted without any reservations and these examinations form the integral part of the teaching and learning process which are the concern of the teacher and the taught and none else. It means establishing full faith in the teacher which will enhance the self respect of the teacher considerably. The raising of standard of courses offered or maintaining the standard of instructions and advancement of knowledge lies in the autonomy of the teacher subjected to overall objectives of higher education. The fear that many underserving students may go out with degrees and with glaring grades is not justified even if it happens because the student has to prove his worth subsequently. Public at large and other organisations should find their own methods of assessment depending on their requirements. Admissions to each new course of study should be regulated through entrance test as suggested by UGC. There may be some black sheep in academic community as there are in every walk of life. We have to make some allowance. The rules and regulations

made to take care of few defaulters curb the academic freedom of the majority and frustrates them and quite often kills the self respect. Motive force will be the reputation of the Institute and the teacher which lies in the performance of the alumnus after he leaves the Institute. The moment we reduce the importance to the examinations and one knows that mere degree from the university is of no good for employment or other purposes students are likely to turn their mind to real things i.e. acquiring knowledge which makes work both the teacher and the taught.

The recent proposal of education ministry to delink the jobs with university degrees, if accepted will reduce the phenomenal rush to colleges and indiscriminate growth of colleges will automatically be arrested. Thus, number getting reduced, there is a hope of improving the quality of higher education. Encouragement should be for variety rather than for uniformity in academic life. Places of higher education should be freed from bureaucracy and other external influences as far as practicable.

### CONCLUSIONS

Higher education should be only for those who have real interest and calibre in furtherance of knowledge and prepared to sacrifice everything else for the purpose. The principle "Those who teach should also examine" without any reservations be accepted. Employers should find their own method of assessment depending on their requirements. Admissions to each new course of study should be through entrance test. A university degree is not necessary for many jobs, as such delinking of jobs with university degrees goes a long way in the promotion of higher education. Learned men should be offered suitable social status and they should be looked after well. The universities should serve the society as torch bearers or search light. Ultimately aim of higher education should be to make human life more prosperous and happy.

"To delink degrees and jobs would leave our colleges without any students.... ."



# Crisis in Higher Education

*Dr. Steven Watson, Vice-Chancellor, University of St Andrews, Scotland, U. K., Mr. Eric K. Kigozi, Executive Secretary, Inter-University Committee for East Africa & Mr. F. S. Hambly, Secretary, Australian Vice-Chancellors' Committee, were interviewed by M. R. Dua while in India in Connection with the AIU Golden Jubilee Celebrations. This is what they said:*

**Q.** *There has been a world wide crisis in education, especially higher education. Would you spell out this crisis vis-a-vis education in your country?*

**Dr. Watson:** We have to some extent, lost confidence in our standards in Britain. We have found it difficult to increase our numbers in higher education while maintaining our special personal care for the pupil.

**Mr. Kigozi:** The so-called crisis in education, especially higher education is, I think, a result of (a) enormous population increase in most countries of the world, (b) demands of complex modern life, (c) too much emphasis put on paper qualifications as the gateway to great employment opportunities, (d) urbanisation growth at the expense of rural development, (e) respectability in society and (f) general rise in standards of living.

While in East Africa a large proportion of the national income is being spent on the expansion and improvement of educational facilities at all levels, there is a general appeal (planned and unplanned) by national governments to school leavers who cannot be placed in institutions of higher learning (such as technical, commercial and universities) to "return to the land".

**Mr. Hambly:** To speak of "crisis" in education is to speak of a multi-faceted problem which clearly manifests itself in different ways in different countries. Indeed, in the same country there can be different degrees of crisis. In my view, one of the major educational problems in Australia is the lack of coordinated development in higher education or to put it more precisely in post-secondary education.

There are three different kinds of institutions providing post-secondary education in Australia—universities, colleges of advanced education and technical and further education institutions. The institutions themselves and the different sectors of post-secondary education operate independently of one another without coordination. As a result, there is no national blue print for post-secondary education. As a result of these there is unnecessary duplication of courses and wasteful use of resources and the system is not geared to respond to national needs. This is a complex matter because the autonomy of individual institutions must be respected.

## Diverse demands

**Q.** *In the changed complexion of the world, do you think Education is capable of meeting the diverse demands of intellectual training, vocational bias and facing life?*

**Dr. Watson:** Yes, it is no more difficult and indeed, with more modern aids, easier now than in past centuries.

**Mr. Kigozi:** Yes, education aims (and must aim) at meeting the demands of intellectual training of student and at preparing him face the numerous challenges of life. The vocational bias is, in my opinion, facilitated by exposing the student to variety of well organised and taught general courses both at primary and secondary levels according to the needs of the society so that at a higher level he is in a position to follow the course for which he is best qualified. I am not advocating professionalism.

**Mr. Hambly:** Yes, and it must. Education and those responsible for education—both teachers and administrators—must be sufficiently flexible to meet change. For example, teachers must be prepared to change course content so as to deal with the ever changing complexities of the modern world. While in some cases this response to changed circumstances has been slow, it is occurring.

## Change in content

**Q.** *Do you favour change in the content of higher education, if so in which direction?*

**Dr. Watson:** Not radically, I think we already cater for technological and for 'pure' subjects. We will need to have more joint study courses but in a Scottish University these are already numerous.

**Mr. Kigozi:** Yes, I do favour change in higher education, higher education especially in developing countries, must first and foremost be geared to the needs of society. In other words, higher education in poor countries should aim at bringing about

national development. Higher education must be regarded as the most effective weapon in the battle against poverty, ignorance and disease.

**Mr. Hambly:** Any change in the content of higher education must be on the question of making it relevant to the changing needs and demands of the society which it serves. But this is not to say that scholarship and knowledge for its own sake are not a part of higher education.

## Student participation

**Q.** *Extensive democratisation of universities and increased participation of students in running the universities has been widely accepted in the U.K., USA and France. What steps are the universities in your country taking in this direction?*

**Dr. Watson:** As you say, we in the UK have already done much. In Scotland the students have elected a Rector for over a century, we prevent students, however, from judging their fellows or their seniors in matters academic. We hold that while they may complain about courses and sit on joint committees to assess the success of courses they cannot from their junior position devise or decide them.

**Mr. Kigozi:** Democratisation of universities and increased participation of student in the governance of universities has now been accepted in many countries of the world because of the student pressure. I believe this development has come to stay and it may be prudent if these countries which have not yet been hit by the wave of unrest to prepare themselves for the inevitable surrender.

East African Universities have been quick in accepting the change and today students send their representatives to the university councils and senates and other lower bodies.

**Mr. Hambly:** There is a danger of over-generalising in answering a question about student participation because what has occurred in one institution has not necessarily taken place in them all. But it would be fair to say that students are now represented on all the principal policy-making bodies of Australian Universities, that they are given a voice in the appointment of staff from the vice-chancellor down; that they are consulted on course content, teaching methods and assessment; and that they therefore have a reasonable say in the running of the universities. Course content and assessment are the most difficult areas and discussions are still in progress in several universities on these issues.

## Economic Development

**Q.** *How do you think can higher education be linked in the economic development?*

**Dr. Watson:** I believe higher education cannot be directly linked with productivity. I believe however that a wider educated public creates the climate of opinion which is requisite for economic

advances. Britain has produced ideas from its highly trained leaders in science. It has failed to profit from them because it has lacked in elasticity of opinion necessary to put these ideas into mass-production. America has had this middle level of sophisticated intelligence.

**Mr. Kigozi:** This is a big and difficult question to answer. I feel that a sensible answer would depend on the particular country one has in mind.

**Mr. Hambly:** Ideally, higher education should be geared to the manpower needs and, in this way, it should assist economic development. Man-power planning is a very complex concept and is subject to very many unknown factors and variables and so it is difficult for universities to plan in this way. But higher education should not be seen as a means to a meal ticket alone, education for its own sake is also a worthwhile goal.

## Explosion of Higher Education

**Q** *India is faced with an explosion of higher education, is there an equivalent rush in your country? And if this rush continues, what repercussion do you see of this in your country in the near future?*

**Dr. Watson:** In Britain after a period of expansion the demand for higher education has slackened. This is fortunate at a time when finance is short. As we will soon reach a period of falling or steady population in the 18 to 23 years olds, I expect consolidation with gradually widening of those reached by higher education and no further rush to expand.

**Mr. Kigozi:** From what has been said during the Golden Jubilee Session of the Association of Indian Universities, I have no hesitation in saying that in East Africa there is no equivalent to the kind of "explosion of higher education" that India is faced with. Nevertheless, it is correct to say that East Africa can learn quite a lot from India's experience.

**Mr. Hambly:** There has been an explosion in higher education in Australia which began in the early 1960's. The result has been an over supply of graduates in some disciplines which has meant that some graduates have been unable to find employment in a career of their first choice.

Another repercussion has been the demand for the opening up of higher education institutions to make them more accessible to all who seek to enrol. As a result, the Australian Government set up a special committee to enquire into the possibility of an open university on the lines set up in the U. K. In the event, the committee did not recommend this but it has proposed that admissions be made easier. Conventional requirements to entry should be broken down, the possibility of transfer between institutions should be eased and the facilities for part-time and external (correspondence) students itself should be expanded.

# An Experiment in Institution Building

C. N. Bhalerao

INSTITUTION building constitutes one of the critical elements in the process of modernization in developing countries. In these countries, institutions in the political, administrative, social, cultural, economic and educational spheres can become centres of social change, "incorporating internally and diffusing through the society new values, attitudes, capacities, behaviour patterns and services". Education is not the least important field in the task of institution building for national development. While, in general, there has been an institutional deterioration in a number of universities and colleges in India, some older and new universities have retained their academic vitality and grown in response to the changing needs and demands of society. The North-Eastern Hill University is one such and represents a significant experiment in institution building in the sphere of higher education in India.

The North-Eastern Hill University, with jurisdiction over the States of Meghalaya and Nagaland and the Union Territories of Arunachal Pradesh and Mizoram and with Shillong as its headquarter, is a Central and federal university, set up under an Act of Parliament passed on 19th July, 1973. The objects of the University are "to disseminate and advance knowledge by providing instructional and research facilities in such branches of learning as it may deem fit; to pay special attention to the improvement of the social and economic conditions and welfare of the people of the hill areas of the North-Eastern region and, in particular, their intellectual, academic and cultural advancement" (NEHU Act, 1973). Dr. Chandran D S Devanesen, the Vice-Chancellor and builder of the University, also emphasised both the regional and national character of the University when he observed, "The richness of the tribal heritage should flow into the mainstream of Indian culture through several channels, one of them being NEHU. At the same time all the intellectual and cultural wealth of India and the world should flow through the University into these once isolated hill areas like a Brahmaputra of new knowledge and inspiration. . . . The aim of the University is and will always be to serve both as a regional and national educational institution in keeping with the Constitution of the Indian Union."

Since the establishment of the Vice-Chancellor's office with only a Personal Secretary and an Officer on Special Duty in August, 1973, the University had to struggle hard to find space, buildings and facilities. This problem is specially acute in Shillong since the city is spread over hills and valleys and is connected with the rest of the country through Gauhati (which can be reached by road only). Thanks to the cooperation of the State Government, the University

office is now housed in the former Secretariat building of the Meghalaya Government. It has also acquired a building for teaching departments along with the Library and laboratories, hostel buildings for men and women students and has acquired a site of over 900 acres on the outskirts of the city where the work of building a permanent campus of the University is expected to begin soon.

After these buildings were acquired, there has been a rapid expansion of both the administrative and teaching wings of the University. From an office staffed only by two officers, the administrative wing has steadily grown into a full-fledged University office. The administration is now organised into three branches—Administration, Accounts and Examinations, and Affiliation, each under the charge of an Officer on Special Duty in addition to a separate Secretariat of the Vice-Chancellor. The University office has 3 Officers on Special Duty, 4 Assistant Registrars, 1 Director of Sports and an administrative staff of 50 persons. On the teaching and research side, departing from the stereotyped departmental system, the University has projected the setting up of the following ten schools somewhat on the lines of the pattern of the Jawaharlal Nehru University:—(1) School of Languages, (2) School of Social Sciences, (3) School of Life Sciences, (4) School of Environmental Sciences, (5) School of Medical Sciences, (6) School of Agricultural Sciences, (7) School of Education, (8) School of Creative Arts, and (9) School of Engineering Sciences. Of the projected Schools, five Schools, viz., those of Languages, Social Sciences, Life Sciences, Physical Sciences and Education have already been established and have started functioning through their respective Departments. These Schools have ten Departments in all (English, Political Science, History, Economics, Philosophy, Mathematics, Botany, Zoology, Education and Continuing Education) and five more Departments (Sociology, Geography, Anthropology, Physics and Chemistry) are expected to be set up in 1976-77. Till now some fifty teachers, most of whom are young, innovative and enterprising, with established reputations in their respective field and with interdisciplinary interests, have been recruited from different parts of the country. Merit being equal, local candidates are given preference in recruitment to teaching posts. The Library (under the direction of a former Librarian of the National Library, Calcutta) has the strength of some 45,000 books at present and it is expected that it will be sufficiently up-to-date and well-equipped within a year to be able to provide the necessary library facilities to the teachers, researchers and students in various disciplines. The Departments have been encouraged to

follow the system of tutorials, discussions, seminars and term papers and a scheme for adopting the semester system to suit the requirements and approaches of different Departments is being worked out. These Departments have also adopted modernised syllabi which aim at encouraging inter-disciplinary approaches both at the under-graduate and post-graduate levels. NEHU is an affiliating University with twenty two colleges spread over the two component states and two Union Territories and it is one of the major tasks before the University to assist these colleges to develop and improve their academic standards of teaching and research. With a view to fulfilling this purpose, in addition to Departmental encouragement through seminars, conferences and institutes, the University proposes to establish a section within NEHU to be known as the Unit for Planning and Development of Colleges and which will be officiated by experts in fields like examination reform, educational technology, science and humanities improvement, etc.

During the last one and a half year, since its establishment, NEHU organised two Inter-Collegiate Sport Meets and began sending teams in the Inter-University Zonal tournaments, two Student Leadership Training Camps (in collaboration with the Vishwa Yuva Kendra of Delhi) and one National Service Scheme Leadership Training Camp. NSS Camps have also been conducted by Colleges in different parts of the region under its jurisdiction. It conducted a Workshop in the Social Sciences for College Teachers with the help of the Centre for the Study of Social Sciences, Calcutta, and hosted the Twelfth Annual Historical Conference of the Institute of Historical Studies, Calcutta. During this period a Regional Centre of the Central Institute of English and Foreign Languages, Hyderabad, was set up in Shillong in collaboration with the University. Two workshops, one at Dimapur, Nagaland, and the other at Shillong, Meghalaya, were conducted by the Central Institute of Indian Languages, Mysore, in cooperation with NEHU. A Regional Centre of NEHU at Kohima, Nagaland, was established in 1974. Another Regional Centre of NEHU at Aizawl, Mizoram, is in the process of being set up. The University has recently started a Pre-examination Centre for candidates belonging to Scheduled Castes and Tribes from the States of Assam, Meghalaya, Nagaland, Manipur, Tripura and the Union Territories of Arunachal Pradesh and Mizoram who intend to appear at the I.R.S. and Allied Services Examination.

Several distinguished scholars and public men also came to NEHU to give talks or visit the University during this period. They include Shri G. S. Dhillon, Speaker of the Lok Sabha, Dr. Ramesh Mohan,

Director of the Central Institute of English, Hyderabad, Dr K. B. Rohatgi, Dean, Faculty of Law, Delhi University, Dr U. N. Singh, Dean, Faculty of Mathematics, Delhi University, Dr S. C. Dube, Director, Indian Institute of Advanced Studies, Simla, Professor Bepin Chandra, School of Historical Studies, Jawaharlal Nehru University (and U.G.C. National Lecturer in History), Dr V. Manuel, Head of the Department of Education, Kerala University, Professor P. Padhi, Head of the Department of Botany, Utkal University, Dr Sengupta of the Zoological Survey of India, Calcutta, Dr S. P. Sen, Director Institute of Historical Studies, Calcutta, and Professor Nicolay N. Kulechov of the Institute of Far East, Academy of Science of the U.S.S.R.

After NEHU was established, Professor R. S Lyngdoh, Speaker of the Meghalaya Legislative Assembly, said, "Shillong has begun to throb with life and activity." Speaking on the occasion of NEHU's first anniversary celebrations, the Chief Minister of Meghalaya, Capt Williamson A Sangma, reviewed the progress made by the University and observed "Even in the very first year of its existence, the University has been able to make a psychological impact on the people of the Hill areas of North-Eastern India. An encouraging aspect of the new University is that it has started its work with great earnestness and dedication and it is a matter of satisfaction that the University is proceeding in the right direction and it has been able to enlist the cooperation and support of the Government and people of this entire region." These favourable comments do not imply that NEHU has no problems to face.

There are problems of attracting competent teachers and scholars to staff the remaining Departments, securing equipment and other facilities and building a campus; there are also pressures of many kinds both internal and external. Indeed, it is because of these problems and the dedication and earnestness with which NEHU has set out to meet them which makes it a challenging enterprise and an instructive experiment in institution building. The social relevance of the University, its standards as a national University, the dynamism of its academic programmes and the role it seeks to play in the development of the North-East region can be attributed, in great measure, to the kind of institution building taking place now at NEHU. Despite the many handicaps under which NEHU was established, it continues, as the Vice-Chancellor said, "to work with the confidence that the people of the hill areas will take pride in having a national University which wants to be an asset to the great North-East, contributing to their development in terms of both material as well as cultural, moral and spiritual welfare as citizens of India." □

# Status of Sports in Universities

G. M. Oza

THE physical exercise, a moral force, in open air is in itself an educational power and will be beneficial to the youth in the Indian Universities. It would certainly help them to imbibe in them the spirit of competition and struggle and would help them to achieve strength and endurance. This would satisfy their nature and pave the path for a proper University spirit.

The author as a teacher who, by conviction, considers sport just as an integral part, as a positive factor in the education of the personality, as training the mind, is naturally very curious to know whether the authorities in the reputed Indian Universities are capable of having an effect on the general education of the University students.

It is up to the members of the society to persuade the University authorities of the equal importance of the body and mind for the development of the personality. "Sport", therefore, in the opinion of the author, must no longer be considered, as was so often the case before, as one of the many branches of education but must be used to complete and put life into the "*daily*" intellectual round. Education has just failed if it does not succeed in making University-leavers vitally aware of the real importance of sports and games for their own well-being and physical efficiency, thanks to which competitive sport can provide an invaluable stimulus and excellent touchstone in future life. In this context, the author begs to refer his worthy readers to the late Rev. Father Didon to whom we owe the International Olympic Congress, ".....To win victories in life, we need real strength, practical strength and we can acquire this only by exercise in the open air and athletics which strengthen the body, and temper the soul...."

We are all aware, these days about the conditions of the environments of Indian cities. The progress of human civilisation and advancement of science and technology are encroaching upon the basic rights of the younger generation to make the best use of open lands from the view point of eugenics. However, the leading Universities, it is hoped, shall have in the near future at least two Cricket fields, a Cricket Pavilion, Gymnasium Hall, Badminton and Table Tennis Halls, Wrestling Pits, Swimming Pool for competitions, modern Boating facilities, Firing range, two Football fields, four Basketball Courts, 15 Volleyball Courts, 12 Tennis Courts, temporary movable spectators' Gallery, a 400-meter track, including facilities, of course, of field sports and Hockey, etc.

The author popularises Life Sciences to the non-science students in the University at Baroda.

The academic year should provide fair, promising and sporting deal for sportmen and sportswomen joining our Universities. An atmosphere needs to be created so that the sportmen occupy an honoured position in the Universities. The facilities and incentives should include:

- (i) If the students miss the classes, laboratory work or tests during the time they represent their University Teams, additional arrangements should be provided so that they do not suffer.
- (ii) Sports Freeships, Scholarships and preferential *gratis* hostel accommodation, etc. should be offered.
- (iii) Certain percentage of seats should be reserved for outstanding sportsmen of the State or National level for admission to almost all the Faculties of the University.
- (iv) It may take time to develop complete courses on Sports & Games which could be offered as an alternative to some papers towards the graduation courses. Thus, the author does not in any way suggest the achieving of a Degree or Diploma be made easier. But the emphasis on this line will involve more participation of sport talents.
- (v) However, the suggestion of the DESHMUKH COMMITTEE to the effect that *in the Degree awarded to a candidate there should be mention of his/her proficiency record in Games & Sports apart from the marks or division in the regular subjects, should soon be implemented in the immediate future. Mention should also be made of the National Efficiency test voluntarily taken by the students.*
- (vi) Shall we ever be possibly able to devise a method for giving due credit in tests for performance in Games & Sports? This is suggested in keeping with consideration the players' sweating on the field, devotion to the game and time utilised to bring laurels for the University and for the cause of the noble sports!

All these things should go a long way in attracting outstanding sportsmen and sportswomen to the Indian Universities. At the same time, it is vital to have sports policy smoothly effected in our Universities. Due care should be taken to see that the 'talent' available to the University is not just wasted but proper physical facilities for sports and able coaching are made available to the students in due time.

To achieve best dividends out of this, the author may be wrong, perhaps absolutely, in his thinking but he does consider that *the necessary development of games in educational institutions like ours should be left to the initiative of the students, that the games should not be organised by 'specialised teachers' and that the various sports associations should be freely formed and freely administered; under the friendly eyes of the authorities and the guidance of the teaching staff.*

# **CONVOCATION**

## **Education heavily urban biased in India**

OUR education must also seek out our people and become more relevant to their needs, said Union Finance Minister C. Subramaniam while delivering the XVIIIth Convocation Address at Sri Venkateswara University, Tirupati.

University education in India has still a heavy urban bias and is by and large unrelated to the realities of rural life and its problems. Medical education, for example, still concentrates on the esoteric diseases of the urban elite, and pays little attention to the basic health needs of the vast rural population. Physical sciences and engineering education too ignore the needs of the villagers. Surprisingly even higher agricultural education tends to acquire an urban bias--as the teachers have never been exposed to the actual conditions of farming in rural areas. Many of our scientists and technologists who have been produced at great social cost, choose to sit in their ivory towers and occupy themselves with academic problems which have little or no social relevance.

Education, thus, makes the rural youth, a foreigner to his own society. He becomes a misfit in his society as he is unable to shed his bias, his thinking and his habits acquired in the university, however irrelevant they may be to rural life. He thus drifts away from the society he came from and is of no use to it. The educated tend to crowd the cities, swelling the ranks of the educated unemployed while the rural areas—who need most the benefits of education—are deprived of them. Higher Technical education in medical, physical and

agricultural sciences and engineering should be made to have a distinct rural orientation and should be made to concern itself with the actual problems facing our rural communities. Our educational system should develop and reflect this national vision.

In many countries, students are required to put in a year or two of military service. Development of the nation is as important as its defence. I do not see any reason why all the university students cannot put in a year of Rural Development service, before they are awarded the degrees by the universities. At least to a limited extent this will expose the students to the hard realities of rural life and problems and influence their thinking. I do not view this period of rural service as social service but as a potent educational instrument for earning through doing. Hence, it may be better to provide for this compulsory Rural Development service some time in the middle of the degree course, so that the student may have the chance to view the rest of the course in the light of his rural experience. This idea needs to be practised especially in relation to the students of technical subjects such as medicine, engineering and agriculture.

Similarly the teachers in the universities too should be asked to put in a year of Rural Development service once in 5 years to enable them to be in touch with development in rural areas. This will enable them to choose problem of significance to rural transformation in their scientific and academic work.

Organisational and institutional arrangements have to be evolved to make the best use of the service of the students, made available as an integral part of the educational system. It is through unremitting labour, that countries work economic miracles. One practical feature which is common to both communistic and capitalistic economic systems is the recognition of the dignity and value of labour. I sincerely hope that the idea of compulsory Rural Development service advocated by me will help our youth to develop a healthy respect of labour apart from exposing them to the realities and problems of rural life.

Science and Technology instead of exclusively looking at the moon and analysing its rocks, should look at our rural areas, and analyse their resources. The knowledge acquired and the technologies developed to land man on the moon, should be harnessed to survey the resources of the earth and exploit it intelligently and efficiently for the benefit of the rural poor. I consider the involvement of our scientists and technologists in our Rural Development efforts to be of the highest importance.

Relevant education holds the key to the solution of our poverty problem. Once we redesign it to suit our needs, and produce generations of educated youth who will fit into the society they came from, and work for its uplift with a clear appreciation of the conceptual framework of our strategy for the elimination of poverty and identify themselves with the fortunes of the rural folks, we would have succeeded in our task—however insuperable it may appear to be. Once we convert our human resources—currently regarded as a liability—into growing assets, our threats will turn out to be opportunities. □

# BOOKS

## EVOLUTION OF COOPERATIVE THOUGHT. By K.K. SAXENA.

Published by Somayya Publications Pvt. Ltd., Bombay (1974); pp. X + 160; Price : Rs. 35/-

COOPERATION has surged as a great idea of the twentieth-century. Through a long process of evolution, it has been distilled into a 'philosophy', a 'way of life', and in its 'down-to-earth application' into a 'mode of conducting business with keen social awareness'. Countries like Japan, Israel, Yugoslavia and, of late, even India have emerged as pace-makers and trend-setters in the realms of this epoch-making movement throughout the under developed world. The advanced countries of Europe and America had already made big strides and their experience radiated both a 'kaleidoscope' of guidelines for the growth of cooperatives in developing nations. As is to be expected, an idea which attempted to take all the people together and launched a concerted tirade against vested interests that baulked the common interests could only grow very gradually. It was not a sudden emergence, an eruption or an explosion. Of course, the evolution through which it passed was no doubt characterised by a radical transformation of attitudes and weaning away of people from 'personal profit' and 'self-aggrandisement' to social responsibility' and 'submergence in totality'. What was anchored to petty action was intended to be elevated to a 'full ecology'—a systematic body of organic knowledge. The last perceived phase of cooperative development has been the crystallisation of past action-based experience into a mould of principles. And these principles have been christened as 'cooperatism'.

The book under review makes an attempt to describe the whole range of cooperative evolution from early beginnings into local

business to late refinements into a global ideology with unaltered business underpinnings. Its narrative is divided into three parts viz., the beginnings, emergence of cooperatism, and patterns of development. The first part contains the genesis of the cooperative idea and brings the reader from the Industrial Revolution down to the Rochdale tradition. Here, efforts have been made to collect a number of events and episodes that brought the Rochdale pioneers on the scene. Both G.D.H. Cole and Sidney Webb cite examples of cooperative activity in Great Britain dating back to the sixties of the eighteenth century. The real beginning of cooperation, according to the two great economic historians, could be traced to the establishment of corn mills, notable among them being the one set up by dock workers of the Woolwich and Chatham in 1760 and the other founded by the inhabitants of Wolverhampton in 1767. The cooperative workshops of the USA also came into being during the last quarter of the eighteenth century. In fact, Robert Owen of Great Britain attempted, albeit unsuccessfully, to establish communities based on ideals of equality, social ownership, mutual aid, just prices, abolition of profit motive and education in cooperation. Dr. Willian Kind, the poor man's doctor promoted mutual thrift societies and pioneered a cooperative journal 'The cooperator' in May, 1828. Fourier of France was another powerful force behind the evolution of cooperation. His attention was, however, focused primarily on production. Followers of Owen set up the 'Rochdale Equitable Pioneers Society' and those of Fourier established a number of French cooperatives such as bakeries and carpenters shops etc. Hermann Schulze-Delitzsch (1808-1883) and Father Raiffeisen of Germany made an impressive contribution to the growth of cooperative institutions and principles—the

former organised associations for small shopkeepers and the latter a number of credit unions. The 'Hungry Forties' which brought a perilous series of famines throughout Europe spurred a lot of cooperative action.

The second part of the book devotes itself to an elucidation of the concept of cooperation—cooperatism. Cooperation here was viewed as an institution, an economic enterprise, a legal entity and an economic system. The main thrust of the discussion may be summed up in Henry F. Bakken's words: "Cooperation is a resultant system of economy. It is a synthesis combining the desirable qualities of the *laissez-faire* economy and the planned economy.....It is a direct challenge to the profit motive system on the one hand and to totalitarian rule on the other". (Quoted by the author on p 37). Chapter VI in the second part describes the principles of cooperation as they have emerged since the Rochdale era. The International Cooperative Alliance (ICA) adopted in 1937 the Rochdalean principles in two major categories viz. primary and secondary. The former included open membership, democratic control, surplus allocation in proportion to member-transactions and limited interest on capital. The secondary principles were not obligatory and included political and religious neutrality, cash trading and promotion of trading. The 23rd Congress of the ICA held in Paris, however, eliminated this distinction between primary and secondary principles and added 'the promotion of cooperative education' as the fifth and 'cooperation among cooperatives or growth' as the sixth principle to the list of primary principles. It should be of some interest to note that the latest ICA list of principles has eliminated 'political and religious neutrality as a basic tenet for cooperative expansion.'

patterns of development and examines economic progress through cooperation, socio-political aspects of cooperation and cooperation and state action. Dabbling liberally on some international progress reports (of the ILO, the U.N., and the ICA) the author here presents in a very simplistic manner a rueful optimism about the future of cooperation. He considers the prospects of a world cooperative commonwealth as quite bright, regards too much of state intervention as dangerous and wistfully looks forward to the day when 'the fading state' would be replaced by a cooperative democracy.

The book may be classed as a synoptic survey of the history of evolution of cooperation in the world. A very important feature of the study is its inclusive character and profuse citation. In an endeavour to impart credibility and authenticity to his argument the author quotes at length from numerous knowledgeable sources.

In overall terms, the effort has been satisfactory. Students of cooperative history may find some useful documentation culled together at one place. Also, the book makes a neat reading for undergraduates. Further edition may, however, attend to the language which, in past, might have suffered an impairment owing to the Printers' Devil.

# From the Press

## George Menezes writes in The Times of India under the heading 'Student Revolt'

THOSE who believe that today's students are good for nothing should have their heads examined. They have probably never heard of a student-philosopher, who said, "nobody in this world is entirely useless, even the worst of us can serve as horrible examples."

In the old days, students used to smash shuttle-cocks and tennis balls over and across nets. The game started with a situation called love-all. Today they smash cars and trains starting with a situation called hate-all.

### Artificial Barriers

Getting out of my car near Churchgate station, I met Mukadam Singh. "What's the buzz, Muk," I said to him, "tell me what's happening"

"We are starting a revolt against a degenerate university system," he yelled, throwing a rock at my front windscreens.

"I can see that," I said, sounding as cool as Maria Schneider in the rape scene in *Last Tango in Paris*, "you seem to be opposed to the barriers imposed by the windscreen of college regulations. I have artificial man-made barriers myself. Like Robert Frost 'something there is in me that doesn't love a wall'."

"Who is Robert Frost?" he asked throwing a few bricks at my doors and rear windscreens.

"Well," I said, "I don't think you could have heard of him. All I can say is that he wasn't a vice-chancellor."

He smiled. "I hope you don't mind my smashing your car," he said, "it's nothing personal."

"Go ahead," I smiled back, "I understand that you are attempting to destroy the outmoded vehicle of a decadent generation."

He was now beaming. "I wish there were more understanding

people like you," he sighed showing signs of being exhausted with the physical activity involved in a revolt.

### Out of Gear

"I wish I had more cars to offer you," I said sympathetically.

"So kind of you," he replied, "but we must turn our attention now to the railways. Knock the bloody thing out of gear. Pull all the chains we possibly can, you know?"

"Great, great," I said, "a kind of lavatory syndrome. I suppose, Flushing the muck out of the stinking educational cesspool," "That's it," he said approvingly.

"Tell me, Muk," I said, "why does your movement not protest against the type of things we protested against when we were in college.... You know, things like hostel facilities, more participation in college administration, incompetent professors, canteen prices, tough question papers and the like?"

### Good Grief

"Look," he said, "you got the whole thing wrong. We don't give a damn about hostel facilities. We don't mind not having a voice in running the university. We have come to accept corruption and incompetency amongst the staff. We are not concerned about the curriculum and we don't object to the question papers being tough. All we want is that examinations should be abolished."

"Good grief," I said, "as simple as that?" "Sure," he said, "ours is not a revolution, it is merely a revolt."

"I haven't seen anything more revolting," I murmured, moving away quickly before he could pull the chain, I was wearing around my neck.

# *Round Up*

## Ahmed's call to help Hindi attain full stature

THE President, Mr. Fakhruddin Ali Ahmed, said that it was the duty and responsibility of all of us "to do everything possible for enabling Hindi to fulfil its role as India's national language."

Inaugurating the 3-day "Shyamsundar Das birth centenary celebrations" organised by the Nagripracharini Sabha, Mr. Ahmed said Hindi's position as India's national language was beyond question. He hoped that everybody in this country, regardless of what area he hailed from, would agree that the nation must have a national language and thus, possess a distinct linguistic identity.

The President also wished that when Indians went on foreign trips, they talked to one another in the national language.

### Fittest Tribute

In a message read out at the function, Prime Minister, Indira Gandhi, described Babu Shyamsundar Das as the maker of modern Hindi, as a great writer and critic, and as a visionary who realised the importance of language and literature as an integrating force in society. She said she was happy that Babu Shyamsundar Das's birth centenary was being celebrated by the Nagripracharini Sabha in the capital.

Mr. Jagivan Ram, and other speakers dwelt at length on the services rendered by the late Babu Shyamsundar Das in the multi-dimensional promotion of Hindi. They said the fittest tribute to him

would be to carry to fruition his cherished dream of securing for Hindi its rightful place in the nation's life.

Speaker after speaker emphasised that the position of Hindi as India's national language would be consolidated and strengthened. The other languages in different parts of India came into their own in their respective states. Also, Hindi must assimilate freely from the other languages of India.

### Preferred Languages

Mr. Jagjivan Ram and Mr. Kamlapati Tripathi said that Babu Shyamsundar Das lived and worked in times when Hindi was considered a rustic language. He worked undaunted for the spread and promotion of Hindi. But even today, the attitude was not entirely gone. English was still the preferred language in India in the higher circles. Mr. Ram said it would be good if Indians knowing or speaking Hindi made it a point to talk only in Hindi whenever they met.

Mr. Ram also said that there was no conflict between Hindi and other Indian languages. The conflict was with English till it was dethroned.

### UGC against open book exams

THE University Grants Commission does not favour the idea of allowing students to use books

during examination papers, unless the repercussions, according to a UGC source.

The "open book examination" system is designed to eliminate the risk of copying and smuggling of notes by students into the examination hall. Some studies in this field had been done in other countries.

### Indian women's participation in politics

JUDGED by the participation of Indian women in the political life of the country "Indian society is almost certainly less inequitable than the Chinese, Soviet and the American."

This is one of the conclusions of the "studies in electoral politics in Indian states" brought out by the Massachusetts Institute of Technology's Centre for International Studies. The second volume of the study deals with three of the disadvantaged sectors -- the princely states, tribals and women.

The study says that the higher participation of women in Indian politics is essentially the result of Mahatma Gandhi's influence and the Congress party more than any other party deserves credit.

Another conclusion is that the high success rate of women in Indian politics is not due to any preference of electorate for women. The success is due to fact that, given the discrimination against women, a woman has to have exceptional ability to be nominated and hence women candidates are likely to be more "gifted" and more likely to win than men.

### Wide Range of Posts

The study says: "Not merely does India have a female Prime Minister, women have also succeeded in becoming members of the Lok Sabha and the Rajya Sabha. They have been governors and chief ministers of states,

ambassadors, members of the cabinet and deputy ministers, and they have held highest position in the organisations of the major political parties."

But this presence of women at the highest political levels co-exists with a generally low rate of overall participation in political life. In the elections to the Lok Sabha in 1962 and 1967 and the assembly elections of 1967, while in absolute numbers women candidates and the successful ones were more impressive than for other countries, percentage-wise, candidates or those elected were low. But these low proportions, put into perspective "cannot dwarf the fact that women have reached the highest levels of political success and seem to be accepted widely as a natural element of the political scene in India."

## Indian's impressions of Korea

"THE more I explore the Korean language, the deeper my understanding and love of this country, which is no longer foreign to me," said Vijaya Ratham.

Speaking on why she loves Korea, the 21-year-old Indian student astounded the Korean audience with her near-perfect command of difficult idomatic expressions and correct pronunciation.

"I am in love with the people and the land of Korea," she said in her 7-minute-long fluent speech. "I love the way the Korean people treat others, especially their elders. I also love the feature of the 'Land of Morning Calm,' its beautiful rivers and mountains. I feel at home because I have discovered many cultural similarities between Korea and my homeland."

A daughter of the Indian vice consul in Korea, Miss Ratnam came to Korea in May, 1973. She has been studying at the Korean Language Institute of Seoul National University for eight months.

A graduate of the University of Delhi, the Indian lady wishes to dig into the history of Korea someday. She is planning to go back home in September this year.

## "Study Abroad"

Around half a million students take courses abroad every year, according to a revised edition of UNESCO'S best-sellers, *Study Abroad* which has just been published.

Of the half-million, the majority are in a dozen principal "host countries" listed as : USA (approximately 140,000 foreign students), France (35,000), Federal Republic of Germany (34,000), Canada (31,000), United Kingdom (27,000), Lebanon (21,000), Italy (18,000), USSR (17,000), Egypt (14,000), Argentina (12,000), Japan (11,000), Spain (10,000), Switzerland (10,000).

This new edition covers scholarships and other forms of financial assistance available to students, teachers and other professionals in a wide range of disciplines who wish to pursue their studies in countries other than their own during the period 1975-1977. Some two thousand institutions in 120 countries, plus over 60 international organizations, are listed offering more than two hundred thousand awards ranging from individual study grants to the large-scale international exchange programmes of governments, foundations and international agencies. They extend over the whole academic and professional spectrum; catering for candidates of all levels from undergraduates and technical and administrative cadets to advanced research scientists, visiting professors and senior executives.

How far can a scholarship really go towards covering academic costs? Is there a travel grant available to get the student to his destination? Does the scholarship cover laboratory equipment costs, special clothing for extreme climatic conditions, an allowance for a dependent spouse and children? To whom does the prospective traveller apply for reliable help on scholastic, domestic, housing problems, etc., on his arrival in foreign surroundings? These are some of the questions answered in *Study Abroad* in respect of the main receiving countries and many others as well.

In fact, few foreign students would be able to subsist in a foreign country, let alone pass their examinations, write their theses, complete their research assignments or profit culturally from their time abroad, if it were not for some form of financial aid of which *Study Abroad* is the world's most complete listing.

## Varsity circuit to be set up

THE Information and Broadcasting Ministry proposes to set up a university circuit by constructing cinema halls in all the universities throughout the country.

The circuit would be set up this year. 32 universities have already been selected and the ministry proposes to select 18 more universities.

In two years, all major educational institutions would have halls where feature films would be exhibited at least once a week.

## CLASSIFIED ADVERTISEMENTS

### BANARAS HINDU UNIVERSITY (Advertisement No. 3/1975-76)

**APPLICATIONS** are invited for the undermentioned posts. The benefit of Provident Fund Pension, Dearness Allowance, House Rent Allowance and City Compensatory Allowance are admissible according to University Rules. The retirement age of the University employees is 60 years except for posts at Serial No. 51 to 54 which is 58 years. The appointment will be made on two years probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications for posts No. 1 to 60 will be entertained on the prescribed forms duly supported with a Bank Draft or Crossed Indian Postal Orders for Rs. 7.50 in favour of the Registrar, Banaras Hindu University towards the application fee. Application forms alongwith the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005, on receipt of Rs. 0.40 paise stamped self-addressed envelope of 23 cm X 10 cm size. Candidates called for interview for these posts will be paid actual Railway fare by the New Second Class plus reservation charges for sleeper and/or actual Bus Fare from the present residence bothways by the shortest route. No other expenses will be paid.

Applications for posts No. 61 to 63 should be made on plain paper stating clearly the Name, Age, Address, Qualifications, Experience etc. alongwith a Crossed Indian Postal Order, Bank Draft for Re. 1/- as application fee drawn in favour of the Registrar, Banaras Hindu University. Candidates called for interview will not be paid any travelling expenses for these posts.

Applications for each post be sent separately alongwith attested copies of Certificates in support of the qualifications and experience mentioned in the application and be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005.

Incomplete applications in any respect will not be entertained for consideration.

Those who are in service should apply through proper channel. M.O. or Cheque will not be accepted towards the application fee.

The last date for receipt of application is 15th June, 1975.

**Note:** Those who have applied in response to our earlier Advertisements for post Nos. 1, 5, 6, 8, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25, 28, 30, 31, 32, 35, 36, 37, 41, 42, 44, 46, 47, 48, 50, 54, 55, 57, 59, 60 and 63 need not apply again but should give further details if any i.e. experience or additional qualifications secured.

### FACULTIES OF SCIENCE AND HUMANITIES

**Professor:** Grade: Rs. 1500-60-1800-100-2000-125/2-2500.

**Reader:** Grade: Rs. 1200-50-1300-60-1900.

**Lecturer:** Grade: Rs. 700-40-1100-50-1600.

**1. Malayiya Professor of Comparative Religion (One)**

Qualifications Essential: (1) A Doctor's Degree or published work of an equally high standard. (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. (3) About five years experience of teaching and/or as a Librarian or of working in a responsible professional capacity in a Library. Desirable: (1) Knowledge of latest techniques in Library Science. (2) Working knowledge of one or more foreign languages.

**2. Professor of Sanskrit (One)**

Qualifications Essential: (1) Doctor's Degree or published work of an equally high standard. (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. (3) About ten years experience of Post-doctoral research and/or of teaching at a University or College. (4) Ability to guide research of a high standard. Desirable: (1) Good knowledge of Sanskrit and/or some foreign languages. (2) Research publications.

**3. Professor of Sculpture (One)**

Qualifications Essential: (1) A Degree or an equivalent qualification in Sculpture preferably in First Class from a recognised Institution. (2) Specialisation in Traditional and Contemporary Sculpture. (3) About ten years professional teaching experience in a responsible position in a recognised institution.

**4. Reader in Zoology (One)**

**5. Reader in English (One)**

**6. Reader in Political Science (Two)**

**7. Reader in German (One)**

Qualifications Essential: (1) A Doctor's Degree or published work of an equally high standard. (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject concerned or an equivalent degree of a foreign University. (3) About 5 years experience of Post-Doctoral research and/or teaching in a University or College. (4) Experience of Guiding Research (except for the post of Reader in German). Desirable: (1) Ability to teach both through Hindi and English medium. (ii) Specialisation in Behavioral

Studies/Indian Studies/Asian Studies—for one of the two posts (for Post No. 6—Reader in Political Science only). (2) Experience of guiding research (for post No. 7—Reader in German only).

**8. Reader in Library Science (One)**

Qualifications Essential: (1) A Doctor's Degree or published work of an equally high standard. (2) Consistently good academic record with first or high second class (B+) Master's Degree in Philosophy or Indian Philosophy & Religion or Comparative Religion or an equivalent degree of a foreign University. (3) About 10 years experience of Post-doctoral research and/or teaching in a University or College. (4) Ability to guide research of a high standard. Desirable: (1) Good knowledge of Sanskrit and/or some foreign languages. (2) Research publications.

**9. Reader in Zoology (Temporary likely to be made permanent) (One)**

Qualifications Essential: (1) A Doctorate Degree in the subject. (2) Consistently good academic record with first or high second class (B+) Master's Degree in Zoology/Biology or an equivalent degree of a foreign University. (3) Published work of high standard in Cytogenetics/Genetics. (4) About 5 years experience of Post-graduate teaching/research. (5) Experience of guiding research. Desirable: (1) Experience in Drosophila Genetics/Drosophila Cytotaxonomy/Radiation Cytogenetics/Mammalian Cytogenetics.

**10. Reader in Zoology (Temporary likely to be made permanent) (One)**

Qualifications Essential: (1) A Doctorate Degree in the subject. (2) Consistently good academic record with first or high second class (B+) Master's Degree in Zoology/Biochemistry/Physiology/Biology or an equivalent degree of a foreign University. (3) Published work of high standard in Biochemistry/Cell Physiology. (4) About five years experience of Post-graduate teaching/research. (5) Experience of guiding research. Desirable: (1) Specialisation in the Biochemistry or Macro-molecules/Biochemistry of differentiation.

**11. Reader in Plastic Arts (One)**

Qualifications Essential: (1) A Degree/Diploma or an equivalent qualification in Clay Modelling or Sculpture in First or Second class from a recognised institution. (2) Specialisation in Portrait or Traditional Sculpture with knowledge of Stone carving, marble carving, wax modelling, plaster casting & Bronze casting. (3) About five years professional experience (Teaching) in a responsible position in a recognised institution.

**12. Lecturer in English (Two)**

**13. Lecturer in Arabic (One)**

**13(a) Lecturer in Persian (One)**

**14. Lecturer in Marathi (One)**

**15. Lecturer in Political Science (One)**

**16. Lecturer in Economics (One)**

17. Lecturer in Psychology (Two)
18. Lecturer in History (Two) (Spl. in Medieval Indian History/Modern Indian History).
19. Lecturer in Library Sciences (One)
20. Lecturer in Chemistry (Two) (Spl. in Organic Chemistry)
21. Lecturer in Chemistry (One) (Spl. in Inorganic, Biochemistry or Analytical Chemistry)
22. Lecturer in Mathematics (One)
23. Lecturer in Statistics (One)
24. Lecturer in Zoology (One)
25. Lecturer in Agricultural Economics (One)
26. Lecturer in German (Two)
27. Lecturer in French (One)
28. Lecturer in Sinhalese (One)

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject concerned or an equivalent degree of a foreign University. **Desirable:** (1) Ability to teach both through Hindi and English medium (except for posts in Languages) (2) Specialisation in Psychology of Personality Mental Measurement (for post No 17 only) (3) Ability to teach History of Modern Political Thought (for post No 18 only), (4) Working knowledge of one or more foreign languages (for post No. 19 only). (4) Experience of teaching Sinhalese Language (for post No. 28 only)

(Kindly refer to Note 1 and 2 as given below)

29. Lecturer in Zoology (Temporary likely to be made permanent) (One)

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic records with first or high second class (B+) Master's Degree in Zoology Biochemistry Physiology or an equivalent Degree of a foreign University. **Desirable:** (1) Specialisation in Protein Nucleic Acid Lipid Biochemistry

(Kindly refer to Note 1 and 2 as given below)

30. Lecturer in Linguistics (One) (Dept. of Hindi)

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in Hindi and Linguistics or an equivalent degree of a foreign University.

(Kindly refer to Note 1 and 2 as given below)

31. Lecturer in Linguistics (One) (Linguistic Section)

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in Linguistics or Comparative Philology or an equivalent degree of a Foreign University.

(Kindly refer to Note 1 and 2 as given below)

32. Lecturer in Dance (Bharat Natyam) (One)

**Qualifications Essential:** (1) A first or high second class Graduate Degree or

Diploma in Dance—Bharat Natyam of a recognised Institution OR a reputed Dancer (Bharat Natyam). (2) Good proficiency in performance. **Desirable:** (1) Knowledge of theory and history of Indian Dance. (2) Acquaintance with other styles of Dancing. (3) Ability to organise dance shows, ballets etc. (4) Teaching experience and ability to teach theory of Dance.

#### INSTITUTE OF TECHNOLOGY

Professor-Grade. Rs. 1500-60-1800-100-2000-125/2-2500

Reader-Grade: Rs. 1200-50-1300-60-1900.

Lecturer-Grade: Rs. 700-40-1100-50-1600

33. Professor of Civil Engineering (Spl. in Structural Engg.) (One)

34. Professor of Pharmaceutics (Spl. in Pharmaceutics) (One)

**Qualifications Essential:** (1) A Doctorate Degree or published work of an equally high standard. (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject concerned or an equivalent degree of a foreign University. (3) About ten years experience in responsible position in Teaching Research Industry (4)(i) Experience of having guided research work of a high standard or evidence of original work in Design Development (for post No 33 only) (ii) Ability to guide research development work as evident by publications project reports etc. (for post No. 34 only). **Desirable:** (1) Corporate Membership Fellowship of Professional organisation Learned Societies (2)(i) Research publication in standard journals or books (for post No 33 only). (ii) Research publications in Pharmaceutical discipline and Industry (for post No 34 only).

35. Reader in Chemical Engineering (Four)

**Qualifications Essential:** (1) A Doctorate Degree in the subject or published work of an equally high standard and/or valuable Industrial experience. (2) Good academic record with first or high second class Master's Degree in the subject or an equivalent degree of a foreign University. (3) About five years experience in teaching/research industry. (4) Specialisation in Petroleum Refining Engineering or Petro Chemicals Instrumentation and Process Control Plant Design and Engineering Economics Mathematical modelling and optimisation/Bio-Chemical Engineering/Transport Phenomena/Kinetics and catalysis Thermodynamics / Unit operations / Nuclear Engineering. **Desirable:** (1) Evidence of original work in research, Design / Development (2) Membership of Professional bodies Learned Societies.

36. Reader in Instrumentation and Process Control (One)

**Qualifications Essential:** (1) A Doctorate Degree with specialisation in Instrumentation and Process Control

or published work of an equally high standard and/or valuable Industrial experience, (2) Good academic record with first or high second class Master's Degree in the subject or an equivalent degree of a foreign University. (3) About 5 years experience in teaching/research/industry. **Desirable:** (1) Evidence of original work in research/design/development. (2) Membership of professional bodies/learned societies.

37. Reader in Inorganic Technology (One)

**Qualifications Essential:** (1) A Doctorate Degree in Chemical Engg./Chemical Technology or published work of an equally high standard and/or valuable Industrial experience. (2) Good academic records with first or high second class Master's Degree in Chemical Engg./Chemical Technology or an equivalent degree of a foreign University (3) About 5 years experience in teaching/research/industry. (4) Specialisation in Heavy Inorganic Chemical Industries Fine and Pharmaceutical Chemicals Fertilizers Electro Chemical Industries Corrosion Metallurgy. **Desirable:** (1) Evidence of original work in research/design development. (2) Membership of professional bodies learned societies

38. Lecturer in Civil Engineering (Five)

39. Lecturer in Electrical Engineering (Three)

40. Lecturer in Chemical Engineering (One)

**Qualifications Essential:** (1) Good academic record with first or high second class (B+) Master's Degree in the subject concerned or an equivalent degree of a foreign University (2) Some experience of Teaching Research Industry (3)(i) Specialisation in Hydraulic Engineering Structural Engg. Soil Mechanics & Foundation Engg Surveying and Photogrammetry (for post No 38 only). (ii) Specialisation in High Voltage Engineering Power Systems Electric Drives Power Electronics Instrumentation (for the post No 39 only) (iii) Specialisation in Nuclear Engineering Plant and Equipment Design Fuels and Energy conversion Reaction Engineering Heat Transfer Mass Transfer Environmental control (for post No 40 only) **Desirable:** (1) A Doctorate Degree in the subject

- 40(a) Lecturer in Mechanical Engineering (Seven)

**Qualifications Essential:** (1) Good academic record with first or high second class (B+) Master's Degree in Mechanical Engineering or an equivalent degree of a foreign University. (2) Experience in teaching/research/industry. **Desirable:** (1) A Doctorate Degree in the subject (2) Specialisation in any one of the following fields: (a) Industrial Engg. (b) Production Engg. (c) Plasticity. (d) Applied Mechanics, (e) Gas Dynamics, (f) Power Plant Engg., (g) Heat Transfer.

41. Lecturer in Telecommunication Engg./Electronics Engg. (Four)

**Qualifications Essential:** (1) A first or second class Bachelor's Degree followed by First or second class Master's Degree

in Electronics Engineering or Tele-communication Engineering or Electrical Engineering (Light Current/Electronics Engineering). (2) Specialisation in any one or more of the following: (a) Communication System, (b) Electronic Instrumentation, (c) Solid State Devices, (d) Microwave/Radar Engineering, (e) Computer Engineering, (f) Quantum Electronics. (3) Experience in Teaching/Research/Industry. Desirable: (1) A Doctorate Degree in the subject.

#### 42. Lecturer in Engineering Physics (One)

Qualifications Essential: (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University.

(Kindly refer to Note 1 and 2 as given below)

(Note) Those who have obtained Doctor's Degree in the subject concerned will also be considered irrespective of the fact whether they have a Post-Graduate Degree in the subject or not for all the posts except Post No. 42 in the Institute of Technology.

### INSTITUTE OF MEDICAL SCIENCES

#### Professor-Grade:

Rs. 1500-60-1800-100-2000-  
125/2-2500

#### Reader-Grade:

Rs. 1200-50-1300-60-1900

#### Lecture-Grade:

Rs. 700-40-1100-50-1600

#### 43. Professor of Surgery (One) (Temporary but likely to be made permanent).

Qualifications Essential: (1) M.B.B.S or equivalent qualification recognised by the Medical Council of India. (2) M.S (Surgery), F.R.C.S Speciality Board of Surgery (U.S.A.). (3) Teaching experience as Associate Professor/Reader in General Surgery for five years in a Medical College. Desirable: (1) Research experience and publications in the field of General Surgery in the Standard journals.

#### 44. Reader in Paediatrics (Two)

Qualifications Essential: (1) M.B.B.S. Degree or an equivalent qualification recognised by the Medical Council of India (2) M.D. (Paediatrics), Speciality Board of Paediatrics (U.S.A.) M.D (Medicine)/ M.R.C.P./F.R.C.P. with D.C.H., M.R.C.P./F.R.C.P. (with Paediatrics as a special subject) or an equivalent qualification (3) About three years teaching experience as Lecturer in Paediatrics in a Medical College. Desirable: (1) Research experience and publications in the subject.

#### 45. Lecturer in Surgery (Neuro-Surgery) (One)

Qualifications Essential: (1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India. (2) M.S./ F.R.C.S. in Surgery with two years special training in Neuro-Surgery/M.Ch. (Neuro-Surgery), Speciality Board of Neurological Surgery (USA). (3) About

two years teaching experience as Tutor/ Registrar/Resident in Neuro-Surgery or in Neuro-Surgical Unit in the Department of Surgery of which one year should be after Post-graduate qualification. Desirable: (1) Research experience in the subject.

#### 46. Lecturer in Pathology (Two)

Qualifications Essential: (1) M.B.B.S. Degree or equivalent qualification recognised by the Medical Council of India. (2) Post-graduate Degree in Pathology, M.D., Ph.D., D.Sc., M.Sc., Speciality Board of Pathology U.S.A Or M.D. (Medicine); M.R.C.P/F.R.C.P with D.B./ D.C.P./ D.Path., M.R.C.P. (with Pathology as special subject) or an equivalent qualification (3) About two years teaching experience as Demonstrator or equivalent post in Pathology in a recognised Medical Institute or Hospital. Desirable: (1) Research publications in the subject (2) Experience in Histopathology work.

#### 47. Lecturer in Radiotherapy & Radiation Medicine (Two)

Qualifications Essential: (1) M.B.B.S Degree or equivalent qualification recognised by the Medical Council of India (2) M.D. M.S. in Radiotherapy or Speciality Board of Radiology (U.S.A) or M.D./F.R.C.P with D.M.R.T F.F.R. (3) About two years teaching experience in the capacity of Demonstrator/Clinical Registrar or equivalent post in the Medical College or teaching Institution in the speciality. Desirable: (1) Persons having experience of handling Radio-Isotope for Therapy and Diagnostic purposes in a teaching Institute. (2) Research experience and publications in the subject.

#### 48. Lecturer in Anaesthesiology (Two)

Qualifications Essential: (1) M.B.B.S Degree or an equivalent qualification recognised by the Medical Council of India. (2) M.D /M.S. (Anaesthesiology), F.F.A.R.C.S., Speciality Board of Anaesthesiology (U.S.A.), M.D M.R.C.P / F.R.C.P. or M.S F.R.C.S. with D.A. M.R.C.P. F.R.C.S (with Anaesthesiology as a special subject) or an equivalent qualification. (3) About two years teaching experience in the capacity of Clinical Registrar or an equivalent post on the subject in a Medical College or teaching Institution Desirable: (1) Publications in Scientific Journals.

#### 49. Lecturer in Medicine (One)

Qualifications Essential: (1) M.B.B.S Degree or equivalent qualification recognised by the Medical Council of India (2) M.D., M.R.C.P., F.R.C.P., Speciality Board of Internal Medicine (U.S.A.) or an equivalent qualification in the subject. (3) Teaching experience as Registrar/Tutor/Resident or an equivalent post in Medicine for two years of which one year should be after P.G. qualification. Desirable: (1) Research experience and publication in the subject.

#### 50. Lecturer in Sociology (One) (Without N.P.A.)

Qualifications Essential: (1) A Doctor's Degree or published work of

an equally high standard; and (2) Consistently good academic record with first or high second class (B+) Master's Degree in Sociology or Applied Sociology or Social Work or an equivalent degree of a foreign University. Desirable: (1) About two years experience of teaching and/or research and/or service programme in Public Health Organisations preferably in the Department of P.S.M. or other allied training organisations.

(Kindly refer to Note 1 and 2 as given below)

#### 51. Medical Officer of Health (One) (Rural Health Centre—Dept. of PSM)

#### 52. Medical Officer (One) (University Health Centre)

#### 53. Medical Officer (Women) (One) (Rural Health Centre—Dept. of PSM)

Grade: Rs. 400-40-800-50-950 likely to be revised+N.P.A. as per rules.

Qualifications Essential: (1) M.B.B.S. Degree or an equivalent qualification recognised by the Medical Council of India. (2) M.D. (P.S.M.) or any clinical subject. (3) Experience of working in P.S.M. Department of Public Health Work or Dormitory care Programme or Clinical work Desirable: (1) Diploma in Public Health or Clinical work

(The selected candidates will be attached to the Departmental Urban or Rural Health Centre as per requirement If the candidate is attached to the Rural Health Centre he has to manage his own accommodation as no Departmental quarters can be provided —applicable for Post No. 51 and 53 only)

(The selected candidate may be attached to any Unit of University Health Centre by the Superintendent, University Health Centre —applicable for post No. 52 only)

#### 54. Junior Research Officer (One)

Grade: Rs. 400-40-800-50-950 (likely to be revised according to the decision on the III Pay Commission Report)

Qualifications Essential: (1) A first or second class M.Sc and Ph.D. in Medical or Biological Sciences, (2) Special Training in Histology, Histochemistry and Electron Microscopy. (3) Some original contribution in the field of Medical Sciences Desirable: (1) Three years experience in Research (2) Research publications

### MAHILA MAHAVIDYALAYA

(Other things being equal preference will be given to Women candidates).

#### Reader-Grade:

Rs. 1200-50-1300-60-1900.

#### Lecturer-Grade:

Rs. 700-40-1100-50-1600.

#### 55. Reader in English (One)

Qualifications Essential: (1) A Doctor's Degree or published work of an equally high standard. (2) Consistently good academic record with first or

high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. (3) About five years experience of Post-Doctoral Research and/or teaching in a University or College. (4) Experience of guiding research.

**56. Lecturer in Urdu (One)**

**57. Lecturer in Political Science (One)**

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. **Desirable:** (1) Ability to teach both through English and Hindi medium (2) Willingness to accept the hostel duties and charge of extra curricular activities. (3) Knowledge of Persian and Hindi, (for post No 56 only).

(Kindly refer to Note 1 and 2 as given below).

**58. Lecturer in Instrumental Music (Sitar) (One)**

**Qualifications Essential:** (1) A first or second class Master's Degree in Instrumental Music (Sitar) from a recognised Institution/University. **Desirable:** (1) Experience of teaching and/or research (2) Ability to teach theory of Music and knowledge of Vocal Music (3) Ability and experience of organising cultural activities. (4) Willingness to accept the hostel duties and residence in the Girl's Hostel and charge of co-curricular activities (5) Experience of hostel work and co-curricular activities

**EVENING COLLEGE**

**Lecturer-Grade**

Rs 700-40-1100-50-1600

**59. Lecturer in Economics (Two)**

**60. Lecturer in Political Science (One)**

**Qualifications Essential:** (1) A Doctor's Degree or published work of an equally high standard; and (2) Consistently good record with first or second class (B+) Master's Degree in the subject concerned or an equivalent degree of a foreign University. **Desirable:** (1) Ability to teach through Hindi medium (2) Experience of organising co-curricular activities of the students

(Kindly refer to Note 1 and 2 as given below)

**OTHER INSTITUTIONS**

**61. Teacher in Graduate Scale (Urdu (One) (for women only) (Central Hindu Girl's School)**

**Grade:** Rs. 250-20-450-EB-25-550 likely to be revised

**Qualifications Essential:** (1) Atleast second class Bachelor's Degree with Urdu as one of the optional subjects alongwith Home Science or Geography. (2) University Degree or an equivalent qualification in teaching. **Desirable:** (1) Postgraduate Degree in Urdu. (2) Adequate experience of teaching the subject in College/Secondary classes. (3) Good at extra-curricular activities, Games, Sports, Guiding, N.C.C.

**62. Teacher in Graduate Scale—Dance (One) (for women only)**

**(Central Hindu Girl's School)**

**Grade:** Rs. 250-20-450-EB-25-550 likely to be revised.

**Qualifications Essential:** (1) Atleast second class Graduate with Degree/Diploma in Kathak Dance or an equivalent qualification of a recognised Institution. **Desirable:** (1) Experience in Folk and Manipur Dance. (2) Good at extra-curricular activities.

**63. Assistant Teacher in Vyakaran (One) (Ranvir Sanskrit Vidyalyaya)**

**Grade:** Rs. 250-20-450-EB-20-550 likely to be revised.

**Qualifications Essential:** (1) At least second class Vyakaran Shastri (Navin and Prachin) from a recognised University/Institution (2) University Degree/Diploma in teaching and/or adequate experience of teaching the subject upto Madhyama classes in a recognised School/College. **Desirable:** (1) Vyakarancharya Degree, (2) Teaching experience on the basis of Paniniya Ashtadhyayi and knowledge of Book editing

**Note:** Applicable for the posts of Lecturers at item Nos. 12 to 31, 42, 50, 56, 57, 59 and 60 only.

1 Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications as given under essential qualification No 2

2 Provided further that if a candidate possessing a Doctor's Degree or Equivalent published work is not available or is not considered suitable, a person possessing a consistently good academic record (due weight being given to M. Phil or equivalent degree or research work of quality) may be appointed on the condition that he will have to obtain a Doctor's Degree or give evidence of published work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments, until he fulfills these requirements.

**INDIAN INSTITUTE OF TECHNOLOGY KANPUR  
IIT POST OFFICE KANPUR**

**Advertisement No. 19/75**

Applications are invited for the following faculty positions in English in the Department of Humanities & Social Sciences at the Indian Institute of Technology, Kanpur.

1- Professor : Rs. 1500-60-1800-100-2000-125.2-2500

2 Assistant Prof. : Rs. 1200-50-1300-60-1900.

3- Lecturer : Rs. 700-40-1100-50-1300-60-1600

The applicant must have a good Master's degree in English followed by

a doctoral degree in Linguistics preferably in one of the following areas:

Pure and applied Linguistics, including computational linguistics, socio-linguistics, phonetics, teaching of English as a foreign language.

In exceptional cases the Selection Committee may relax the required qualifications.

Posts are permanent and carry retirement benefits in shape of CPF-cum-Gratuity Scheme or CPF-cum-Pension-cum-Gratuity Scheme. The age of retirement is sixty years. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those applicable to the central Government employees stationed at Kanpur. Higher initial pay is admissible to specially qualified and deserving candidates. Candidates called for interview will be paid second class-railway fare from the place of duty to Kanpur and back by the shortest route.

The applicants may apply on plain paper giving full particulars of area of interest. They should give names of three experts who can comment on the work and competence of the applicant. Application be accompanied by a Indian Postal Order of Rs 7 50 (Rs 1 87 for SC ST candidates)

All the applications should reach the Registrar, Indian Institute of Technology Kanpur, IIT PostOffice, Kanpur 208016 U.P. (India) on or before 15th June, 1975

**INDIAN SCHOOL OF MINES  
DHANBAD-826004.**

**Two-year Industry-Oriented Postgraduate Programme in Opencast Mining**

Indian School of Mines intends to start from August 1, 1975, a two-year Industry - Oriented M Tech Degree/ DISM diploma programme in Opencast Mining. Applications for admission to the programme are invited in prescribed form obtainable from the Registrar, Indian School of Mines, Dhanbad-826004, on sending a self-addressed envelope affixed with stamps of the value of Rs 1 65. The application (together with marksheets relating to the final as well as the penultimate year examination of the qualifying examination and documentary evidence of practical experience, where required), should be submitted to the Registrar through messenger or by Registered Post/A.D. on or before June 30, 1975. All applications to be submitted through employers.

**Eligibility:** MSc (or equivalent) in Applied Geology with at least three years experience in a responsible capacity in opencast mines, or Degree (or equivalent) in Mining, Civil, Electrical or Mechanical Engineering.

Only candidates sponsored by employing organisations will be admitted. Sponsorship means retention of lien on post and grant of a suitable allowance.

**Programme Structure :** Three (half-year) terms to be spent at the School for

institutional, instruction, and one year in the industry on an approved industrial project.

Admissions will be made on merit (for which purpose a qualifying test may be held) and taking into consideration aptitude and ability. For further details, Head of the Department of Mining, Indian School of Mines, Dhanbad-826004, may be contacted.

(M.S. RAMAMURTHY)  
REGISTRAR

**SAMBALPUR UNIVERSITY  
JYOTI VIHAR : BURLA  
No 19873/TDS      Dated 27-5-75  
ADVERTISEMENT**

Applications in the prescribed forms with attested copies of marksheets and certificates of all examinations passed are invited for two posts of full-time lecturer-in-law for L.R Law College, Sambalpur.

- I Scale of pay—Rs 400-40-800-50-950/-
- II. Age of Retirement—Sixty years of age.
- III. Qualification essential — At least a second class Bachelor's degree in law with five years teaching and/or professional experience at the bar.

OR

At least a second class Masters degree in Law.

All the posts carry usual dearness allowance as would be sanctioned by the University from time to time.

Seven copies of the application forms will be supplied from the University office to each candidate in person on cash payment of Rs. 2/- (Rupees two) only. Candidates intending to receive forms by post are required to send (a) Crossed Indian postal order of Rs. 2/- payable to the Finance Officer, Sambalpur University, Jyoti Vihar, Burla (b) A self addressed envelope (23cm x 10cm) with postage stamp worth Rs. 2/- affixed to it with the words "Application form for the teaching posts in the Sambalpur University" superscribed on it. Money Order/Cheque will not be entertained.

The last date of receipt of application in the office of the University, Jyoti Vihar, Burla is 26th June, 1975.

All communications should be addressed to the undersigned by designation only.

The selected candidates must join within two months from the date of issue of appointment order. The candidates will be required to appear for an interview at their own expenses before a Selection Committee.

Suitable persons may be appointed on contract basis on a higher initial start if it is deemed desirable in the interest of the University.

Sd/-G. P. GURU  
REGISTRAR

Govind Ballabh Pant University of Agriculture & Technology  
Pantnagar, Distt. Nainital  
Pin Code No. 263145

**ADMISSION NOTICE 1975-76**

APPLICATIONS are invited by 30th June, 1975 for admission to the following degree programmes on pres-

cription basis. Applications along with application form, along with other details by sending a crossed Indian Postal Order or Money Order of Rs. 2/- payable to the Comptroller of this University or in cash at Comptroller's office accompanied with a self-addressed envelope (28 x 13 cm.) bearing postage stamps worth Re. 1/- Name of the degree programme for which the form is required should be clearly written on the envelope. Separate applications are required for each programme.

**POST-GRADUATE PROGRAMMES**

1. Ph.D.

1. Agronomy 2. Agricultural Economics 3. Plant Breeding 4. Plant Pathology 5. Soil Science 6. Animal Breeding 7. Animal Physiology 8. Vety. Pathology and Hygiene 9. Vety. Anatomy 10. Biochemistry 11. Animal Nutrition.

2 M.Sc Agriculture

- 1 Agronomy 2. Agriculture Economics 3 Entomology 4. Genetics 5 Horticulture 6 Plant Breeding 7. Plant Pathology 8. Soil Science 9. Animal Breeding 10. Animal Nutrition 11 Dairy Husbandry 12. Poultry Husbandry 13. Biochemistry 14. Microbiology

3. M.V.Sc.

1. Vety. Anatomy 2 Vety. Bacteriology 3. Vety. Pathology 4. Vety. Hygiene & Public Health 5. Vety. Physiology 6. Vety. Pharmacology 7. Vety. Gynaecology & Obstetrics 8 Vety. Parasitols 9. Vety. Medicine 10 Vety. Surgery 11 Animal Breeding 12. Animal Nutrition 13. Dairy Husbandry 14. Poultry Husbandry 15 Biochemistry

4. M Tech. (Civil Engineering)

1. Structural Engineering with specialisation in concrete structures, steel structures and Design of storage structures
2. Hydraulic Engineering with specialisation in Hydraulic Engineering and Hydraulic Structures

5. M.Tech. (Agril. Engineering)

1. Farm Machinery & Power 2 Irrigation & Drainage 3 Soil Water conservation 4. Process Engineering.

6. M.Sc.

1. Physics 2 Mathematics 3. Biochemistry 4. Microbiology 5 Genetics 6. Plant Physiology 7. Food Technology

**UNDERGRADUATE PROGRAMMES**

College of Agriculture—B.Sc Agriculture & Animal Husbandry

College of Vety. Medicine—B.V.Sc & A.H.

College of Technology—B.Tech. (Agril./Civil/Elect./Mech. Engg.)

College of Home Science—B.Sc. (Home Science)

Diploma in Home Science

Eligibility qualifications and other requirements for admission to various degree programmes will be supplied with the application form. Admissions are made strictly on merit.

**MEDIUM OF INSTRUCTION**

The medium of instruction is Hindi for B.Sc. Ag & A.H. and B.V.Sc. & A.H. (However, only one section with English medium in each of these programmes will also be provided).

ADMISSION FOR HOME SCIENCE AND BUSINESS FOR THE REST OF THE PROGRAMMES

**SOME SPECIAL FEATURES**

1. A residential University with integrated approach to teaching, research and extension 2. Emphasis on practical training 3. Student advisory system 4. Placement service 5. 220 net instructional days per session 6. Liberal financial assistance including supply of text-books on half price, part time employment as Graduate Assistants @ Rs. 250/- p.m. and Rs. 200/- p.m. for a large number of Post-graduate students, fellowships and scholarships etc. 7. Most sophisticated and upto-date equipments including a computer centre, and above all, 8. Very high standard of academic performance and discipline. Only such candidates should seek admission to the University as believe in hard work and good conduct.

2. The University reserves the right to discount while determining their comparative merit for admission, the percentage of marks, to the extent deemed proper, obtained by the candidates from the Boards of Intermediate/Higher Secondary Education or Universities in cases where the University feels that the percentage of marks awarded by such Boards or Universities do not reflect the true merit of the candidate

5. Admissions are also likely to be made in the second trimester beginning November 1975 for candidates whose results are not declared by the time the admissions are finalized in the first trimester beginning July 1975 subject to the availability of seats.

O S. Misra  
REGISTRAR

**INDIAN INSTITUTE OF TECHNOLOGY KANPUR  
IIT POST OFFICE  
KANPUR 208016**

**ADVERTISEMENT NO. 2075**

IIT Kanpur is one of the five Institutes of national importance set up by the Government of India in 1960. It has about 1200 undergraduates and 800 post-graduates on its rolls. Undergraduate Programme offers training in six different fields of engineering and Post-graduate programme prepares for a higher degree in these engineering subjects as also research programme leading to Ph. D. degree in engineering, sciences and humanities. It is located on a self developed campus having community facilities like primary and secondary schools, a Health Centre, shopping centre with a bank, post office etc.

The Institute is looking for a person of wide experience for the post of Registrar for the Institute :

**Job description :** Secretary to the Board of Governors and the Senate; overall responsibility of the office related to the administration of the Institute including recruitment, promotion and discipline of the staff.

*(Continued on page 26)*

# THESES OF THE MONTH

## A List of Doctoral Theses Accepted by Indian Universities

### PHYSICAL SCIENCES

#### Mathematics

1. Gupta, Deep Chand. Some vibration problems of elastic plates. Meerut University.
2. Gupta, S. C. On integral transform and spherical functions. University of Rajasthan.
3. Krishna Prasad, Lakkaraju Southagya Raya. Polynomial bases for representation of  $U(N)$  in the chains  $U(n) \supset R(n) \supset R(3)$  and  $U(n) \supset SP(n) \supset R(3)$ . Andhra University
4. Krishna Rao, P. Optimal economic growth: Some theoretical explorations. I.I.T., Delhi.
5. Parvatham, R. Studies in functions analytic in the unit disc with special reference to properties like univalence, starlikeness, convexity and close-to-convexity. University of Madras

#### Physics

1. Babu, Ravi Prasad. Studies of internal and external Bremsstrahlung from continuous betas. Andhra University.
2. Dube, Mahesh Chandra. The studies of optical systems in partially coherent light. Vikram University
3. Garg, Ajai Kumar. Optical, infrared and laser Raman studies in hexagonal layer semiconducting compounds. I.I.T., Delhi
4. Jain, Sohan Lal. Study of absorption of radiowaves in the ionosphere. University of Udaipur
5. Jayapandian, S. Contribution to the study of the molecular constants of ethylene type molecules. University of Madras.
6. Jogi, Santosh Kumari. Lattice dynamics of semiconductors and metals. I.I.T., Delhi
7. Khanna, Raj Kumar. Harmonic generation and self focusing of electromagnetic waves in gaseous and semiconductor plasmas. I.I.T. Delhi
8. Misra, Bijoy Mohan. Investigations of the five day period global pressure oscillation. University of Poona
9. Revathy, K. Collisionless plasma and the magnetosphere. University of Kerala
10. Sagoo, Mohan Singh. Acoustic propagation and its interaction with electromagnetic field. I.I.T., Delhi
11. Talele, Ganashvam Dhondu. Electron diffraction studies of some chalcogenide and oxide films. University of Poona
12. Vijayalakshmi Ravettihalli Krishna. Studies in X-ray analysis of molecular structure. University of Madras.

#### Chemistry

1. Bhardwaj, Arun Kumar. Mechanism of oxidation of organic compounds by N-Bromo succinimide oxidation of alcohols. University of Udaipur
2. Bhise, S. P. Chemistry of heterocyclic compounds. A search for new aldehydes, dyes and analytical reagents. Awadhesh Pratap Singh University
3. Chaudhari, Popat Nathu. Reactions of compounds related to dimethyloctane, P-menthane and cholestan. University of Poona
4. Chowdhury, Kausik. Studies on synthetic inorganic ion exchangers. Visva Bharati.
5. Choxi, Gopalbhai Shankerlal. Reactions of hydroxy-quinolines. Sardar Patel University.
6. Dakwale, D.S. Kinetics of oxidation of oxalic acid and malonic acid by water decomposition products of blue perchromic acid. Awadhesh Pratap Singh University.
7. Dave, Shiv Lal. Genesis and classification of red and black soils of Banswara District, Rajasthan. University of Udaipur.
8. Gijare, Meena Ashok. Studies on thermo-and aquoluminescence from Y-irradiated crystals. University of Poona.
9. Jagdish Singh. Chemical examination of *Platanus orientalis* and synthesis of isopentenylated isoflavonoids and hydrozycoumarins. University of Jammu.
10. Lavti, Devi Lal. Studies on evaluation and improvement of structure of Rajasthan soils. University of Udaipur.

11. Madan Mohan. Stereochemical investigation of some transition metal chelates involving nitrogen as donor atom. Meerut University.

12. Malkani, Raj Kumar. Synthesis of some mercaptoalkylamines and study of certain aspects of reactions of organic compounds with manganese (III). University of Udaipur.

13. Nigam, Rama Shankar. Application of physical methods to the analysis of essential oils. Awadhesh Pratap Singh University.

14. Paruthi, Harindra Kumar. Physico-chemical studies on some metal chelates of coumarin derivatives. Meerut University.

15. Patni, M. C. Chemistry of aromatic amines: A search for new cyanine dyes and analytical reagents. Awadhesh Pratap Singh University.

16. Powar, Vishnu Kaloji. *Bacillus subtilis* phytase. University of Poona.

17. Pratap Singh, A. Jagaveera Arunodaya. Debromination of L, B-dibromo-B-phenyl propionic acids. University of Madras.

18. Raina, Krishan. Some aspects of chemistry of tellurium compounds. I.I.T., Delhi.

19. Rajendra Prasad. Physico-chemical studies of complexes of anils with transition metals. Meerut University.

20. Satya Pal Singh. Chemical constitution and biosynthesis of seed oils. Meerut University.

21. Selvaraj, P. V. Complexometry. Mixed ligand complexes of uranyl ion with amino acids and simple and substituted carboxylic acids. University of Madras.

22. Sharma, Ram Gopal. Kinetics and mechanism of oxidation of aromatic alcohols by peroxydisulphate ion. Meerut University.

23. Shrivastava, Ashutosh. Studies on redox reactions and their application to the determination of mercaptans and xanthates. University of Jabalpur.

24. Surendra Pal Singh. Studies on blue perchromate. Meerut University.

25. Syal, Surender Kumar. Structural transformations in alkali perchlorates and  $KClO_4 - NaClO_4$  binary system. I.I.T., Delhi.

26. Thayaumanavan, B. Some application of mass spectrometry in biochemistry. University of Poona.

27. Tiwari, A. R. A study on aromatic aldehydes: A search for new azlactones and chemotherapeutic agents. Awadhesh Pratap Singh University.

28. Vyas, Ramesh Kumar. Studies of some hydroxyquinolines and their metal complexes. Vikram University.

29. Zurshi, Shyam Kumar. Chemical investigation of some Indian essential oils. Vikram University.

#### Earth Sciences

1. Ananthanarayanan, P.N. Geology around Sathanur. University of Madras.
2. Gothe, Narasimha Narayan. Geology of the granitic and the associated rocks of Mundargi-Hadagalli area, Karnataka State. Kerala University.
3. Jaish, Bajranglal Chunnilal. Study of the Bundelkhand granites around Jhansi. Vikram University.
4. Karmarkar, Balkrishna Moreshwar. Deccan trap basalt flows in the Bor Ghat section of central railway. University of Poona.
5. Sadanandan Pillai, C. Petrology and petrochemistry of Deccan trap flows around Jabalpur, M.P with special reference to geochemistry. University of Jabalpur.

#### Engineering & Technology

1. Agarwal, S.C. Investigation of the performance and industrial applications of thermistor circuits. University of Rajasthan.
2. Basu, Tapan Kumar. Dynamic and transient stability analysis of two machine system. I.I.T., Delhi.

3. Chakrabarti, Natarajan Narayana. Studies on the effect of water as a modelling material. University of Madras.
4. Karki, Karan Singh. Flow over a square heated ann. I.I.T., Delhi.
5. Maharaj Kumar Vuppuluri. Progressive changes in material parameters during fatigue. I.I.T., Delhi.
6. Narasimhan, Veena. Graft copolymerization of natural and modified cotton cellulose using some acrylate monomers. I.I.T., Delhi.
7. Padmanabhan, N. Hydrodynamics and mass transport in packed distillation columns. University of Madras.
8. Sharma, L.N. Studies in magneto-electrets polycrystalline sulphur. Bhopal University.
9. Spolia, Sudesh Kumar. Stochastic models for stream-flow simulation. I.I.T., Delhi.
10. Sureshchander. Properties of threshold functions of more than eight variable sand their detection. I.I.T., Delhi.

## BIOLOGICAL SCIENCES

### Anthropology

1. Vijaya Bhanu, B. Population distances—biological, cultural and geographical: A study of the Ezhavas, Pulayas and Parayas of Kerala. University of Poona.

### Microbiology

1. Dhruva, Bharati Ramalai. Chemical, nutritional and biochemical studies in plant tissues culture such as Techno grandis (teak). M.S. University of Baroda.

### Biochemistry

1. Parameswaran, M. Nutritional deficiencies and enzymes of glutamate metabolism in the rat brain. M.S. University of Baroda.
2. Ramaswamy, S. Studies on lactase-phlorizin hydrolase complex of the small intestine. University of Madras.

### Botany

1. Ahuja, Prakash. Ecophysiological observations on the seeds of certain desert plants with special reference to germination, productivity and energetics. University of Rajasthan.
2. Balasubramanian, R. Studies on strains of the cotton wilt pathogen *Fusarium vasinfectum* (Atk) University of Madras.
3. Bhatt, Govardhan Prasad. Morphological studies in the family solanaceae. Meerut University.
4. Garg, A.K. Studies in keratinophytic fungi. University of Rajasthan.
5. Gopal, Thumala. Studies on genetics of sporulation in *Anavaima doliolum*. University of Udaipur.
6. Gothwal, Bishambhar Dayal. Studies on identification of pathologically different isolates of *Ustilago tritici* (Pers.) Rostr. and inheritance of resistance in wheat. University of Udaipur.
7. Gour, Har Narayan. Taxonomical and physiological studies on some plant pathogenic fungi. Udaipur University.
8. Kothari, Maheshbhai Jayantilal. Studies in the papilionaceae of Gujarat (Floristics, stomata and trichomes). Sardar Patel University.
9. Lokendra Singh. Inhibition of potato virus X and certain fungi by plant extracts and chemicals. Meerut University.
10. Mungikar, Anil Madhukarao. Agronomic studies of leaf protein production-IV. Marathwada University.
11. Rangarajan, R. Studies on the procambium in certain organs of monocotyledons. University of Madras.
12. Reuben, Donald Ernest. Experimental studies on growth and flower sex expression in *Phyllanthus fraternus* and *acalypha indica*. University of Delhi.
13. Shah, H.O. Morphop hysiological studies during the vegetative and reproductive differentiation in wheat. Gujarat University.
14. Sharma, Jai Kumari. Physiology of sex modification in plants with special reference to *Momordica charantia* (L.) and *Zea mays* (L.). Meerut University.
15. Sharma, Vishnu Kant. Studies no nitrogen fixation

16. Shrivastava, P. Studies on seedling development in *Zea mays* (L.). University of Udaipur.
17. Thakore, B.J. Bhupi Lal. Investigations on fallowing processes, epidemiology and control of phytoplasma disease of maize, *Zea mays* (L.) in Rajasthan. University of Udaipur.
18. Trivedi, A.P. Ecological observations on *Utricularia stellaris* (L.) with special emphasis on biological productivity ecological energetics and seed germination. University of Rajasthan.

### Zoology

1. Choudhari, Anand Chandikadasrao. Nematode parasites of vertebrate animals. Marathwada University.
2. Karel, A.K. Haematological, including biological studies of *meriones burrianae* (Jordon), the Indian desert gerbil treated with insecticides. University of Rajasthan.
3. Madhavan Pillai, Moena. Studies on B-glucuronidase of salivary glands (also acid phosphatase, esterase and alkaline phosphatase.). Shivaji University.
4. Mishra, Gyan Chandra. Studies on the digestive and nervous systems of *Poecilobdella granulosa* (Savigny 1822) Udaipur University.
5. Narasubhai, Angara Venkata. Aspects of physiology of the domestic fowl. Karnatak University.
6. Saini, R.S. Histological and morphological studies of the family nepidae. Awadhesh Pratap Singh University.
7. Seth, Tilak Raj. Morphology of common Indian cobra, *Naja Naja* (Linn.). Meerut University.
8. Tyagi, Hari Raj Singh. Histoenzymological studies on certain sense organs of some invertebrates and vertebrates University of Udaipur.

### Medical Sciences

1. Patel, N.B. Pharmacological evaluation of some newly synthesized ganglionic active glutarimide compounds. Gujarat University.

### Agriculture

1. Abdul Kareem, A. Studies on the antifeeding effects of two organotin compounds, triphenyltin acetate and triphenyltin hydroxide on *spodoptera litura* (F.), *Periclista ricini* (F.) and *Sphingopteryx subsecivella* (Zell) lepidoptera. Tamil Nadu Agricultural University.
2. Asthana, Surendra Singh. Economic impact of high yielding varieties programme in I.A.A. District Alwar of Rajasthan. University of Udaipur.
3. Brahm Pal Singh. Response of mustard, *Brassica Juncea* (L.) Gern and Cose to select sources of sulphur on alkaline calcareous soils. University of Udaipur.
4. Chundawat, Govind Singh. Effect of soil versus foliar application of urea on yield and quality of hybrid bajra. University of Udaipur.
5. Gopalan, M. Studies of feeding behaviour of salivary secretions of *Ragmus importunites* (Distant) hemiptera, miridae and its influence on the physiology of sunnhemp, *Crotolaria juncea* (L.). Tamil Nadu Agricultural University.
6. Hanumantharao, G.V. Studies on water relations and nutrient absorption in some high yielding varieties of wheat with special reference to biochemical changes within the plants. University of Udaipur.
7. Kanjaria, M.V. Factors affecting phosphate availability in some soils of Western India. University of Udaipur.
8. Mundra, Satya Narayan. A study on communication behaviour of village level workers in a selected district of Rajasthan. University of Udaipur.
9. Nihal Singh. Effect of trace elements on the quality of fodder crops. University of Udaipur.
10. Rajoo, Rajinder Kumar. Herbicidal influence on the nutrient uptake and plant constituents in paddy, *Oryza sativa* (L.) and maize, *Zea mays* (L.). University of Udaipur.
11. Ramaswamy, K.R. Studies in the genus *conchurus* (L.). Tamil Nadu Agricultural University.
12. Sharma, Munshi Ram. Nutritional studies in peach—effects of varying doses of N.P.K. on growth, yield and quality. Meerut University.
13. Tippennavar, Mallappa Basappa. Effect of moisture,

nitrogen and phosphorus on growth yield and quality of ground nut. Meerut University.

14. Uddi Khan Singh. Effect of water management, nitrogen and phosphorus application on consumptive use of water, yield and oil content of safflower in Chambal command area of Rajasthan. University of Udaipur.

## SOCIAL SCIENCES

### Psychology

1. Chhabra, Nirmal. A study of certain social psychological variables relating to teachers' morale at secondary and college levels. Meerut University.

2. Jang Bahadur Singh. Adjustment problems of college students in relation to their reaction to frustration, drive level and study habit variables. Magadh University.

3. Jha Suman, Brahmanand. Consistency among attitude components in their degree of valence. Bhagalpur University

4. Rakhmaji, Bodude Ramdas. A psychometric study of various techniques of measuring association values of nonsense syllables and meaningful material used with Marathi speaking subjects. Marathwada University

5. Ramachandrachar, Kodangala. A study on creativity; evolving a test to identify children with creative ability at the school leaving age M.S. University of Baroda.

6. Srivastava, Roop Kamal. Effects of culture, sex and age on person perception. Meerut University.

### Sociology

1. Gorwani, Naintara. Role, structure, self image and social change: A sociological study of female students. University of Rajasthan.

2. Rishi Ram Singh. Social planning and welfare services in India. University of Udaipur

### Political Science

1. Barua, Arun Chandra. The administrative system of the Ahoms. University of Gauhati

2. Jag Bandan Singh. The President's rule in Indian constitution, 1950-70. Meerut University

3. Jhure, Vijay Kumar Lakshmanrao. Arab Israel dispute since 1948. Vikram University

4. Lakshmi, C.S. United States and the problem of refugees. Jawaharlal Nehru University.

5. Misra, Sudhakar. Theory and practice of Sarvodaya. Meerut University

### Economics

1. Joshi, Arvid Dattatriya. A study of external financing of India's plans of economic development. Vikram University

2. Pathak, Dattuprasad Shankarlal. The working of the monetary system in India with reference to the plan period 1951-66. M.S. University of Baroda.

3. Sarkar, Suman Chandra. Prospects of trade among developing countries. Visva Bharati.

4. Sinha, V.C. Demographic factors in India's economic growth since 1947. Awadhesh Pratap Singh University.

5. Sukh Pal Singh. Performance of Indian railways during the plan period. Meerut University

### Commerce

1. Joshi, Ashok Ramkrishna. An empirical study of small scale industries in Poona. University of Poona.

2. Kar, Ganesh Chandra. Problems of agricultural labourers in Assam since independence. University of Gauhati.

### Education

1. Bhattacharya, Siba Prasad. Micro-teaching in the training of polytechnic teachers. M.S. University of Baroda.

2. Lalithamma, K.N. Some factors affecting achievement of secondary school pupils in Mathematics. University of Kerala.

3. Modi, Damayaati Jadavji. Construction and standardization of a listening comprehension test in Gujarati for class VIII. M.S. University of Baroda.

4. Pathak, Yogini Chandravadan. A study of some aspects of physical growth of children from two to six years of age from urban and rural areas of Gujarat. M.S. University of Baroda.

5. Shah, Rasiklal Somchand. College campus life in perspective. M.S. University of Baroda.

6. Shinde, Ganpatrao Baburao. Role of the panchayati raj leadership in expansion and improvement of primary education in Panchmahals District. M.S. University of Baroda

7. Sood, J.K. A study of attitudes towards science and scientists among certain group of students and teachers in India. University of Rajasthan.

8. Trivedi, Shanker Lal. The dynamics of pressures on certain practices in educational administration. University of Udaipur.

### Management

1. Pishbin, Mohamad Taghi. A study of the government policies in Iran in respect of the welfare and protection of employees under government including public sector. University of Delhi.

## HUMANITIES

### Philosophy

1. Balasubrahmanyam, R. The Taittiriyanopanisad-bhasya-vartika of Suresvara. D.Litt. University of Madras.

2. Chakraborty, Sudhir Chandra. Satyapratishta-vada (Truth realisation). Visva-Bharati.

3. Moitra, Shefali. Some aspects of the nature of cognitive reference. Visva-Bharati.

4. Vendulsashy, Chandra Prabha. Sufiyad ka darshanikatva-aur bhartiya sanskriti ki itihas mein uska sthan. Meerut University.

### Linguistics

1. Sugatha, J. Ballads of North Malabar: A descriptive and comparative study. University of Poona.

### Literature

#### English

1. Gupta, Nand Kishore. Symbolism in the novels of D.H. Lawrence. Meerut University

2. Khan, Mohd. Mustafa Mohd. Mustaqueem. The later phase of Mark Twain's writing: A thematic study. Marathwada University.

3. Mathur, Ravindra Kumar. The sources and influence of Dr. Johnson's critical concepts. Vikram University.

4. Narayan Ernest Hemingway. A critical study of his novels with special reference to his treatment of love. Meerut University.

5. Sahay, Braj Nandan. A critical study of L H Myer's Magadh University

6. Sinha, Mithilswar Prasad. Political ideas in the poetry of W.B. Yeats. University of Gauhati.

7. Vashistha, Narendra Kumar. The evolution of the christ-hero in James Fenimore Cooper's leather stocking tales. Meerut University.

### French

1. Madanagobalane, K. Andre Malraux et L'Inde. Karnataka University.

### Sanskrit

1. Gupta, R.P. Balmiki Ramayan mein rajnitik tarfa. Awadhesh Pratap Singh University.

2. Jain, Bihari Lal. Bhaktarak saklikirti: Ek Adhyayan. University of Udaipur.

3. Jha, Madhav. Nageshbhatt kritey laghushabdendu

shakhrasy sameekshatmakam adhyayanam K.S. Darbhanga Sanskrit University.

4 Jha Praful, Giridhar. Amas-Sneeksha. K.S. Darbhanga Sanskrit University.

5 Jha Shastri, Ram Chandra. Acharya Kuntvirchitsay vikroktiji vitsay presheelnam. K. S. Darbhanga Sanskrit University.

6 Mishra, Mahesh. Shardanashay bhavprakashnam K.S. Darbhanga Sanskrit University.

7 Mishra, Phoolchand Agnipurani ka jyotishashastra adhyayan K.S. Darbhanga Sanskrit University.

8 Mishra, Tilak Nath Kavitakirkchakr Chudamani Shri Harsh Mishra virchinasay nashdheychristasay darshnik vishishtadhyaynam K.S. Darbhanga Sanskrit University.

9 Srivastava, Uma Mahabharat ke pramukh patron ka manovigyanik adhyayan University of Rajasthan.

10 Thakur, Sri Vardhan. Pribhashendu sneeksha K.S. Darbhanga Sanskrit University.

#### Hindi

1. Agrawal, Dharm Prakash Pravid-kavya mein bhava-vyanjana. Meerut University.

2. Awasthi, Sudhutti Sanskrit evem hindi ke Ram-Latha kavyon ka tulnatmak anushilan Awadhesh Pratap Singh University.

3. Banbir Prasad Manas shilp University of Rajasthan.

4. Bansal, Jagdish Narain. Tulsi-sahitya mein sangya paryayon ka adhyayan Meerut University.

5. Goel, Shyam Bala Hindi mein bhakukatin Ramkavya tatha Krishnakavya ki nauji bhawana ka tulnatamak adhyayan Meerut University.

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##### Qualifications and Experience

(i) Essential—(i) a university degree (ii)

minimum 10 years of experience in a responsible supervisory administrative position in a Government educational or research Institute/Commercial houses of national standing Postgraduate degree or diploma in public Administration or Management.

(iii) Desirable—

Pay Scale—

Rs. 1100-50-1300-60-1600

Upper age Limit—45 years.

The scale of pay given above is subject to revision as per Third Central

Pay Commission recommendations as approved by Government of India. The post carries allowances according to Institute rules which at present correspond to those admissible to Central Government employees stationed at Kanpur. Higher initial pay is admissible to a highly qualified and experienced person. The selection committee may relax any of the above requirements for the post in an exceptional case.

Appointment will be on contract basis initially for a period of 5 years. Deputation on foreign service terms will be acceptable. The Incumbent will be entitled to join the Institute's Provident Fund as applicable and other benefits such as housing, medical care etc. as admissible to other regular employees of the Institute.

Other thing, being equal, preference will be given to Scheduled Caste Scheduled Tribes candidates.

Applications should be made on prescribed forms obtainable free of charge from the Registrar of the Institute by sending a self addressed un-stamped envelope of 25 cm. x 10 cm. size. Names of three persons who are fully acquainted with the professional experience and character and nature of the applicant may be given so that a reference could be made. Applications accompanied by a postal order for Rs 7.50 (Rs. 1.87 for SC/ST candidates) should reach Registrar, Indian Institute of Technology Kanpur, IIT Post Office, Kanpur 208016 not later than July 31, 1975.

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The 12 metre high antenna at Sriharikota, north of Madras, is an electronic eye and ear which scans the horizon when the Satellite is about to emerge from there. This Australian made listening device is capable of picking up signals from "Aryabhata" from ten degrees above the horizon on all sides.

# University News

UNIVERSITY DECISION-MAKING  
IN THEORY & PRACTICE

A CHRONICLE OF HIGHER EDUCATION & RESEARCH \* JULY 1975 Re. 1.25



Shri I. J. Patel (President, AIU), Vice-Chancellor of Gujarat University with  
Shri H. C. Sarin, the then Adviser to the Gujarat Governor at the inaugura-  
tion of Seminar on University Sports held at Gujarat University, Ahmedabad.

## CLASSIFIED ADVERTISEMENTS

### UNIVERSITY OF DELHI

Applications in prescribed form are invited for the following post :—

#### BUSINESS ECONOMICS :

ONE READER

#### SCALE OF PAY :

1200-50-1300-60-1900

#### Qualifications :

Good academic record with a first or a high second class Master's degree either in COMMERCE or in ECONOMICS with a Doctor's degree or equivalent published work. Independent published work (in addition to the published work mentioned above) with at least 5 years teaching experience in Honours Post-Graduate classes essential.

The prescribed application forms for the post can be had from the office of the Director, South Delhi Campus, D-25-D, N.D.S.E. Part II, New Delhi-110049, either personally or by sending a self-addressed envelope with stamps worth Rs. 1-50.

Selected candidates will be required to produce the original documents relating to their age, qualifications, experience etc. before joining the appointment.

Applications alongwith the attested copies of degrees and other certificates etc should reach the Director South Delhi Campus not later than the 21st July, 1975.

#### Notes :

1. It will be open to the University to consider the names of suitable candidates who may not have applied Relaxation of any of the qualifications may be made in exceptional cases in respect of the post on the recommendations of the Selection Committee
2. Convassing in any form by or on behalf of the candidates will disqualify
3. Candidates called for interview from outside Delhi will be paid 1½ times of the 1Ind Class Railway Fare (as re-classified w.e.f 1-4-1974).

**REGISTRAR**

### UNIVERSITY OF UDAIPUR UDAIPUR ADMISSION NOTICE (1975)

Applications are invited for admission to various programmes (Under-graduate and Post-graduate) of the Colleges of the University:

#### I. College of Agriculture:

(Udaipur Campus)

1. Ph.D. (by course work):
  - (a) Entomology, (b) Plant

Breeding and Genetics, (c) Plant Pathology, (d) Agronomy and (e) Soil Science.

#### 2. M.Sc. (Ag.):

(a) Agronomy, (b) Entomology, (c) Horticulture, (d) Plant Breeding and Genetics, (e) Plant Pathology, (f) Soil Science (g) Animal Husbandry, and (h) Dairy Science.

#### 3. B.Sc. (Ag.) Four-year Integrated Course,

(Jobner Campus):

#### 1. M.Sc. (Ag.):

(a) Agricultural Economics, (b) Agricultural Extension (c) Agronomy (Dry Land)

#### 2. B.Sc. (Ag.):-Four-year Integrated Course

### II. College of Veterinary and Animal Science : Bikaner

#### 1. B.V.Sc. & A.H – Four-year Course.

#### 2. M.V.Sc.:

(a) Bacteriology, (b) Veterinary Medicine, (c) Parasitology, (d) Obstetrics & Gynaecology, (e) Animal Breeding & Genetics and (f) Surgery.

### III. College of Technology and Agricultural Engineering : Udaipur

#### 1. B.F. (Ag.): Five-year Integrated Course

### College of Home Science : Udaipur

#### 1. B.Sc. (Home Science): Four-year Integrated Course

### V. School of Basic Sciences and Humanities : Udaipur

#### 1. M.Sc.:

(a) Physics, (b) Chemistry, (c) Botany, (d) Zoology, and (e) Mathematics

#### 2. M.Com.:

(a) Accountancy and Statistics, (b) Business Administration, and (c) Banking Management

#### 3. M.A.:

(a) Drawing and Painting, (b) Economics, (c) English, (d) Geography, (e) Hindi, (f) History, (g) Philosophy, (h) Political Science, (i) Psychology, (j) Sanskrit, (k) Sociology, (l) Urdu, and (m) Mathematics.

#### 4. Three-year Degree Course (Arts/Science/Commerce).

#### 5. Bachelor of Library Science (B.Lib.Sc.)—One-year course

#### 6. Certificate Course in Library Science -4½ months duration

### VI. College of Law: Udaipur

#### 1. L.L.M

#### 2. LL.B.

#### 3. Diploma in Labour Laws, Labour Welfare and Personnel Management

**NOTE :** Eligibility qualifications, and other requirements for admission to the under-graduate and post-graduate programmes can be ascertained from the Information Bulletin supplied with the Application Form

The Information Bulletin along-with the Admission Form can be had from the respective Deans of Colleges Director, School of Basic Sciences and Humanities, Udaipur on payment of Rs. 2.50 (in person) and Rs. 3.00 by post by sending a crossed Indian Postal Order in favour of the Dean Director of the Colleges School concerned

Last date of receipt of application in the offices of the Dean Director is as given below

1. Rajasthan College of Agriculture, Udaipur ..July 11, 1975.

2. S.K.N. College of Agriculture, Jobner ..July 15, 1975.

3. College of Veterinary and Animal Science, Bikaner ...July 5, 1975

4. College of Technology and Agricultural Engineering, Udaipur. ....July 7, 1975

5. College of Home Science, Udaipur ..July 15, 1975.

6. School of Basic Sciences and Humanities, Udaipur. ....July 25, 1975.

7. College of Law, Udaipur. ....July 14, 1975.

**REGISTRAR**

# UNIVERSITY NEWS

Vol. XIII                    JULY  
7                            ★                            1975

*A Monthly Chronicle of Higher Education*

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

*Editor : ANJNI KUMAR*

## Co-ordinating the Varsities

By D. K. Ghosh

IN THE present serious economic crisis of the country which, it would not be an exaggeration to say, is also, to a great extent, a global problem, greatest care should be taken to utilise the resources of the country in the best possible way. In our country, what was our asset in the pre-independence period has unfortunately turned to be our liabilities in so far as the feeling for the cause of the Nation is concerned i.e. a National Character much needed to build the Nation undermining all personal, communal and regional interests. In the pre-independence period, the sole aim was to free the country. It was because of the strong determination and selfless sacrifices that we achieved the independence. As against this, in the post independence period, the country has failed to locate the determination of the 'mass' to face the odds in order to build the country. Efforts and energies have travelled the selfish ways and lost in the darkness.

A survey of the developments in the Indian Universities in the post-independence period especially of the last 10 years will show that in most of the Universities, much of the development work was done to meet stray needs without paying due regard to the character, aims and the overall needs of the University as a whole. Nor have they been done keeping in view the needs of the Region as a whole. The developments that took place did not really co-ordinate the work and developments that were being done in other Universities. This has greatly resulted in duplication of work and consequently improper investment of the resources of the country. Thus, the investments in education especially in Higher Education can hardly be said to be in keeping with the ready requirements. This should all the more make it necessary to spend the resources on carefully selected Projects.

Whatever has been done had whatever unhappy results we have seen must, at least at this stage, work as a guide to us for the future as it is high time that we should view the academic problems and needs of a State as a single Unit and identify the Projects to be taken up which will—

- (i) help remove regional imbalances.
- (ii) co-ordinate the work of the various Universities in the States.
- (iii) raise the academic standard and extend its area.

The task of achieving the above objects is not an easy one. But in order to make best utilisation of the resources, it should be done boldly without fear and favour. More than the question of resources, it is the question of setting the disorder academic home in order.

*(Continued on Page 11)*

# University Decision-making

## In Theory & Practice

*Swaraj Bandyopadhyay*

WHILE analysing the existing situation in the field of academic administration in general, problems and relevant issues pertaining to the decision making systems in particular in the country, the present paper attempts firstly, to throw some light on the directions of research in the stated field; and secondly, suggests for change of the existing pattern of academic administration into a new, effective one.

An exponent in educational administration, Philip Coombs,<sup>1</sup> clearly indicated that improved management at all level is a "pre-condition" for achieving prescribed institutional goals in any educational system. If Coombs' concept holds true, "the practice" of modern management techniques become inevitable to improve the existing educational administration in the country today.

In India, Higher Education as elsewhere is undergoing several simultaneous revolutions in the shape of mass enrolment, examination chaos, successive disorders, and wide spread sense of futility, etc., and there is hardly any available mechanism to guide it. Today education has become one of the largest organized activities of the country involving an expenditure which is perhaps next to the defence. This is in tune with the multiplied enrolment of the last 27 years. Since independence the average enrolment rate per year in undergraduates, post-graduate and professional education have been increasing at a rate of 9.6%, 11% and 10.7% respectively. This will go on increasing at a greater pace during 1975-76 to 1985-86.<sup>2</sup> Administratively, however the system remains largely modelled after the pattern of the University of London, etc., although some innovations have been made. It is, therefore, apparent that the existing situation would merit a very wide and well established administrative machinery to discharge executive responsibilities to achieve prescribed goals of the institution. It has been customary, of course, to establish through legislation and statutes, decision making apparatus, right at the time of inception of the Indian Universities.

Williams (1972)<sup>3</sup> attributed the disappointments in educational planning to two main factors : firstly,

that the educational planners have not been sufficiently concerned with "the polities" of long range planning; and secondly, that the technical expertise and the statistical information needed for the same have proved to be greater than was foreseen. He found that the nature of education is such that there are many effective decision-makers e.g. ministers of education, bureaucrats, local government officials, directors of educational institutions, teachers and not least the students. Effective decision in regard to the educational planning requires that somehow all the actors (representatives) be brought on to the stage with a role related to the importance of their function. In the same light, Sisson<sup>4</sup> analysed the existing methods of decision-making in the academic institutions and how the same compares to the systematic planning procedures proposed by others. He also indicated as to the way in which the systems approach can be applied in higher education and the processes involved in effecting such a change.

So suggested the Kothari Commission<sup>5</sup> that "the programmes to be emphasised during 1975-1985 will include..... During this decade, emphasis should begin to shift in favour of higher education". It was also indicated by the same commission that the proportion of GNP allocated to education will rise from 2.9% in 1965-66 to 6.0% in 1985-86. Now the question arises that how do the practicing administrators of the University plan to shift the direction of development and can utilise the granted resources in the best possible way? It is evident that to meet these increased demands decision making apparatus has to be that much proactive in nature to tackle the complex administrative problem, often defiant, confronting our universities and centres of higher education today and then to give substantial weightage to the more complex problem of planning. It is time for them to bestow special attention to this issue.

In theory, decision-making in brief, "influences the organizational health and goal attainment of the whole system. It, in turn is influenced by the role interactional process and organizational climate"<sup>6</sup> as well. If the dynamics of the university system is

carefully examined, then it will be evident that the performance of the system is greatly regulated by various factors of organisational health such as creativity, autonomy, functionality, etc. And this again is induced by the various strategies of decision making and the climate of the organization concerned. However, the fundamental principle of university administration is the responsibility of developing an educational system of which central responsibility will be to create and operate a "productive system". Thus, an effective administrator should be able at least to define a problem, collect relevant information, and bring this data to bear on the problem. Moreover, university administrators have the responsibility of ensuring that their institutions meet the demands placed on them by the society. Lack of social commitment seems to be one of the weakest gaps of the university system in India today.

In the recent times, the university's major functions of teaching, research and service, which have been appraised, evaluated and criticized by educators, have also come under the attack of students. Moreover, the administration of our institutions has often proved to be a focal point of dissatisfaction among the major subsystems of the university system. Essentially, students have demanded a greater role in the administration of the university, and representation in key administrative, personnel, and curriculum committees. These and other demands and criticisms have precipitated a crisis of confidence in the contemporary university and have resulted in administrative, curricular and admissions policy changes in a number of institutions. However, where the university administration is in firm control and there is little discontent, student indiscipline is less likely to occur. For instance, we know that student unrest is less common in those academic institutions which have comparatively higher expenditure per student, those with lower proportions of students from scheduled castes and tribes, those institutions of applied learning etc., than those at the other end of these distributions. It is to be observed as to why missionary controlled academic institutes are less undisciplined than private colleges?

It is well conceived that in our country "best" practiced administrative mechanism today is of *reactive in nature*, which may only help the university "exist" in the present. This has, none the less, contributed towards the present state of affairs prevailing in the university campuses of Jadavpur, Rabindrabharati, Kalyani, Bangalore and Allahabad. Above all, do the decision making processes in our universities inspire confidence that a satisfactory answer will be available to the questions arising out of the new demands on the universities?

In the context of the rapidly changing scene of the country, we need *proactive* administrative apparatus, which would ultimately include "initiative taking" and also help the university to plan for the future. In this context, Ashby (1961)<sup>7</sup> stated "Looking at Indian universities a century after their foundation, one cannot but help feel that they have

failed to adapt themselves sufficiently to the vast and unique opportunities which surround them; they seem to have lost enthusiasm and initiative under the crushing problem which have beset them. Despite three major commissions they have not been able to extricate themselves from their own brief history... this failure of the university to meet the challenge of Indian society has many complex causes, but among the causes are undoubtedly the decisions made". Again Ashby<sup>8</sup> advocated that two things the academic administrators should master to cope up with the changing demands and to maintain an effective administration as well; firstly, the study of probability theory and statistics because administrative decisions are in fact exercises in probability theory; secondly, the strategy of science which would include some understanding of the organization of science. On the other hand, Kumar (1971)<sup>9</sup> warned that the democratisation of decision making process in the academic sphere should not be considered in vacuum. It should be a part of - (i) the participation of the academics in political decision making through direct involvement in political activity or by association with the administrative machinery; (ii) decision making through participatory democracy in academic institutions at the level of professional organization, academic and executive councils, departmental committees, and general bodies considering of students, teachers and administrative staff. The immediate need is to improve the quality of leadership combined with the institution of the organizational framework.

Nevertheless, it has to be borne in mind that if higher education, in its proper perspectives, has to be moved in its present phase, the question of reform of strategy management will have to be pursued with all seriousness. And it is time we attend seriously to the question of resolving the conflicts and inner contradictions and confusions that have immobilised the university system in India. In advanced countries, teaching and research have shifted to a new direction, which is more relevant and in accordance to the recent developments in the academic world. Present assumptions, tools, techniques and organizational framework of higher education will have to be judged by the dynamics of the world today and by their relevance to discernible trends of the future.

To meet the motivations for this reform, both administrators and faculty must find out improved ways of enlisting all members of the enterprise, i.e. members of senate and syndicate, academic and administrative officers, faculty members, non-academic staffs in a dynamically vast improving and collaborative effort. Such a move must contribute to the elimination of "inflexible" and tradition-bound practice in the past and such effort, if translated into action, will bring about working consensus among all members of the institution—the faculty, administrators and the staff, administrative goal of the institution. However, environments do pose certain problems for organization: problems to which organizations must often adjust if they are to remain viable or effective. Of course, it depends on the

organization's ability to adapt to changing conditions both internal and external and on its flexibility to cope with unpredictable emergencies.

It has also been realised that the issue which is crucial for the effective administration in the universities, is not so much, the structure of the organization and the system of decision-making, but the "process" by which the decisions are made at various levels in the university and the mechanism by which it is implemented<sup>10</sup>—because the former is integrally tied up with the latter. And thus, the emphasis is placed upon processes and methods for ensuring proper actions. The decision making processes in the universities in present day India require to be systematically appraised in regard to their "effectiveness". The absence of any worthwhile study of the internal decision-making process in the universities is a serious handicap in understanding the problems related to the university administration. A critical examination of the unhealthy situations prevailing in almost every university of the country will reveal the most unhappy state of affairs in academic and administrative spheres culminating in utter disruption and confusion in achieving intellectual goals. Darkenwald (1971) discovered that the relationship between the degree of institutional differentiation and conflict between departmental and administrative subsystems in colleges and universities are quite marked. He also supported the hypotheses that conflict between the department and the administration is greatest at "medium-differentiated"<sup>11</sup> institutions, that conflict is most salient in decision-making related to departmental affairs and interests and where a key role in the process of decision-making is played by the head of department.

Finally, in order to explore the reasons and the factors responsible for this particular unprecedented breakdown of the administrative set up of the universities in India, it is to be very carefully considered whether any fruitful effect can be achieved in taking recourse to the decision-making process in its true perspectives. It is needless to mention that the gravity of the proposition has been engaging attention of scholars of repute as well as by the government agencies. Even as early as 1969 while appraising the academic administration in Indian situation Philip G. Altbach<sup>12</sup> diagnosed rather had foreseen this situation and cautioned that "how, one might ask, the current situation to be improved ? Certainly the main ingredient for constructive educational change is the 'will' to change, and the ability to take appropriate decisions effectively at all levels of the educational system. One must also know how to change and what aspects of the system require alteration or reform. Even in this area, Indian higher education

requires not only the raw data of research but also the detailed analysis of the social scientists. Unfortunately, research concerning various aspects of higher education has been scanty if not entirely lacking. It is curious that academician have been so slow to examine their own institutions particularly when there is widespread agreement that reform is desirable even if difficult to implement. It is clear that without adequate information concerning higher education effective decision-making is impossible." Perhaps Altbach had foreseen the problem of decision-making in our universities in its true perspectives and thus titled the work "Permanent crisis in Indian Higher Education". Should the crisis remain "permanent" for another few decades to come ?

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# Student Unrest & Universities

THE spasmodic revolts which boiled up at scores of Indian Universities over the past decade have a good deal more to it than one might gather from press reports. Over the last decade students' behaviour in a University campus has undergone rapid changes—from a traditional and conventional bound moral and spiritual part, it has now emerged as a modern, permissive and progressive lot with little respect for words like 'traditional', 'conventional' or 'moral'. Many have put the blame on a handful of romantic New Leftists, playing at revolution : or on clumsy, indecisive academic administrator or on the malaise over Vietnam : or on the vague epidemic of student unrest which seems to be sweeping the world.

Students all over India, a decade ago, were mostly conventional and tradition bound and generally accepted the idea when they came to the precincts of a University that 'it's not done', if an idea was insituted in them they should rise in revolt against the professors or against the administrators. That happened, because all of them had their eyes on the future—good results which ensured good prospects of employment. In society also well-behaved brilliant boys were given far better standing than simply brilliant boys without morals. Students who flocked to the Universities were mostly with brilliant under-graduate results. This picture has undergone rapid transformation.

Indian Universities had long enjoyed by law the right to run its internal affairs without political inter-ference. But this right had, in most Universities in India, been stretched to free the University from any control by civilian authorities. With the increasing clamour for mass higher education, Indian Universities are now filled with all sorts of students—good, bad, indifferent and above all, the extremists. With this the limelight of the University campus is being steadily focussed, instead of on the brilliant students, on those students who create problems for the University.

This latter section now started claiming extra-territorial status for the University and immunity for themselves, the professors and the University employees. Even the police, in hot pursuit of a criminal, could not follow if he took sanctuary in the University.

If the position remains unaltered the Universities would become places to harbour criminals rather than places of higher education. Could the Universities be allowed to remain a State within a State ? When the district authorities or the police authorities were informed about the occurrence of troubles in University campus, they requested for a written order for their entry into the University campus. This is a lot of moonshine ! In the performance of their duties, police should act in the University grounds with the same authority as in any other part of the country.

Many young scholars come to the University with their life-plans all laid out. Others come to the

University not yet sure what to do with their lives. They want to make an appraisal of their own capabilities, and of the dauntingly complex World beyond the University gates. These students are not after professional training; what they want to nibble at is "Liberal Education". But liberal education is on the wane or rather extinct. What has really sounded the death knell of liberal education? The best account is set forth by Christopher Jencks and David Riesman in the book, 'The Academic Revolution'.

The revolution these two describe originated, broadly, at the termination of the Second World War, when the demand for additional University places began to grow with explosive speed. The only people who could meet this demand—the University teachers—suddenly found themselves in a highly strategic position. As sole purveyors of a scarce and precious commodity they used this new-found power to enhance their own wealth, prestige and authority and seized a big chunk of power from University authorities.

With such leverage, the professoriat soon began to reshape the University to suit its own desires rather than those of the students or their parents. It is a common knowledge that teachers to-day are doing less and less teaching. The routine problems of mass higher education have fallen by default to graduate students. Students who expect "a visible relationship between knowledge and action, between questions asked in the class-room and their lives outside" get instead "pedantry and alienated erudition".

Dr. Chandran D. S. Devanesen, the Vice-Chancellor, North-Eastern Hill University, Shillong, while delivering his address in the Dibrugarh University Convocation held at J. B. College, Jorhat stressed : "One positive aspect of the student upsurge is the rediscovery of the basic fact that a University is primarily intended for the students who constitute the majority of the academic community. Therefore, students have a role and a part to play in both the academic and administrative aspects of the corporate life of the University. But it also calls for a mature and responsible student-leadership which can play a constructive role in changing and reshaping our Universities to suit the altered conditions and the need for rapid social and economic development to promote the welfare of our people".

What do the general students mean by "student-power"? As I see it, specifically, they want a voice in what is taught, so that at least some courses will be relevant to their lives and interests rather than to the Colleges/Universities and the research projects of the teachers. Dr. Devanesen, further stated "Universities should be seriously concerned as to what their students are going to do after they graduate. We need to introduce vocational guidance and counselling and an employment bureau in touch with the employing agencies in every University. The employers also should be consulted as to what kind of knowledge and skills they require so that we are

not content with the stereotyped courses which produce graduates who are unemployable because they are not qualified for anything specific or have been given a purely text-book based mass of information with no practical training added to their theoretical knowledge." Sage words.

A great many people take it for granted that today's 'youth culture' in India is the wave of the future. They assume that as the present generation of University students become the young adults of tomorrow, their new life-styles will come to dominate Indian society and economy. Seventeen year olds are traditionally rebellious, in search of new idealities, addicted to causes and intoxicated with ideas. But young adults between the ages of 21 & 35—and specially young adult women tend to be the most conventional group in the population the one most concerned with concrete and immediate problems. This is the age in which concern with job, advancement, career, income, home and medical bill, moves to the fore. And this is the age-group, which for the next 15 years, is going to dominate Indian society increasingly and constitute its centre of gravity. Therefore the task before teachers, administrators and Government is immense and far-reaching.

From my own personal experience, I find that students have another set of complaints which are often the pretext for uprisings and even more frequently make headlines. They are concerned with the house-keeping of the University : its rules about hostel, food, women, drink and the like. These rules date back to an earlier era when students were regarded as children who were entrusted to the University for their moral upbringing. To this end, the parents insisted that College, University serve as relentless chaperon. The Universities have made no attempt to repeal the conventional house-keeping rules, least society and the Government suspect that the Universities have become the hot-bed of sin. But, it is for certain, they can't enforce them, and usually make only a perfunctory pretext of doing so.

A very sensible solution, as some of the more venture some academic administrators are beginning to realise is to hand over to the students a major share of their responsibility. Of course serious law violations have to be dealt with by the police. And insurrectionary outrages, such as sacking University Offices and house-breaking by night, obviously have to be put down swiftly and decisively, by whatever police or administrative action may be necessary.

But the whole crux of the situation lies in this : the administration and the University teaching departments should get rid of most of their present house-keeping functions. In that case, they will have more time to attend to details on their big problems how to restructure the University to make it once more a centre of meaningful liberal education, rather than a mere training ground for professional specialists. Sooner this is brought about, the better it will be for the University and the society.

# A Bilingual Alternative for Higher Education

Paul Penderson

FOR many years universities around the world have taught courses, programs or their whole curricula in the English language for the benefit of students from the English speaking world. What are the advantages and disadvantages of U.S. universities teaching courses in language other than English? This bilingual alternative for higher education might increase institutional flexibility and benefit both the non-English speaking foreign student and the American internationalist student studying other cultures.

In the present situation the non-English speaking student seeking entry to a U.S. university is at a distinct disadvantage. One of the most temptingly precise "cut-off" measures available to admission procedures is a student applicant's tested knowledge of the English language. Limited finances have resulted in trimming the budget and cutting back student enrolment in most departments with domestic priorities overshadowing international educational ideals. English language test scores provide a seemingly justifiable rationale for cutting back foreign student enrolment, assuming that measured proficiency in English can predict academic success. The dangers of this tendency are indicated in the substantial literature which describes the low predictive validity of TOEFL (Test of English as a Foreign Language) scores and other indicators of English language fluency in relation to grade point averages or other measured criteria of academic success. Academic excellence, even for foreign students, relates to many other factors besides the student's tested knowledge of the English language.

The student's fluency in English is predictably related to several factors, each tending to decrease the likelihood that the student will be willing to return to the country of his origin: (1) Favourable relations with host families and successful home visits; (2) the possibility of part or full-time employment while a student (3) successful social interaction with American students on or off campus, (4) the possibility of employment in the United States or in another English-speaking country after completion of the studies (Spolsky, 1968). Fluency in English would be important insofar as these goals define the primary purpose of a student's educational experience, but less important when these goals are secondary or tertiary to the student's education.

Even where a foreign student is trained in English, he does not always use English in his job after returning home. In Keats' (1969) follow-up on Colombo Plan returnees from Australia, she found that 20 percent of the 65 returnees from Thailand and 23 percent of the 110 returnees from Indonesia reported that they

were using their national language rather than English in their jobs. A proposal for training some foreign students from these two countries in their national language might be particularly relevant to jobs not requiring the use of English after the student returns home.

Recognizing with Kaplan (1968) that "It appears morally wrong for any institution to admit students with little or no proficiency when inadequate English training may doom them to academic failure," the language problem has left the American university with four alternatives. (1) In some cases the foreign student who is unable to communicate in English has been refused entry into American universities. (2) In other cases the institution has allowed the foreign student favoured treatment in recognition of his difficulty with the English language and instituted the more lenient "foreign student B grade". (3) In still other instances the institution has presented intensive language programs to increase the foreign student's facility in English after arrival. (4) Finally, the alternative of exporting educational facilities to foreign countries has offered several advantages.

A fifth alternative, in addition to the above four, is suggested by Spolsky and Kaplan and deserves further consideration. Kaplan (1968) suggests that "it might be possible to train foreign students in their native languages rather than in English".

There are several criticisms to bilingualism in programs of higher education Kaplan himself limits its applicability. "For students representing more esoteric languages and who come in relatively small numbers, it would be quite out of the question" (Kaplan, 1968). Other criticisms indicate the difficulty of locating bilingual teaching resources in some of the languages. There is a fear that bilingual educational opportunities would reduce the involvement of the student in the U.S. culture of his "host country," short-circuiting a valuable part of his educational experience. In a similar vein there is a fear that bilingual curricula would eliminate effective communication between foreign students and other students at the host university. Underlying this criticism is the assumption that a student must spend several years in our American environment participating fully in that environment through relationships with the local community, whatever his field of study or interest.

I suggest that a bilingual curriculum might be made available for specific training programs in situations where *both* the teaching resources (e.g. faculty or upper level graduate students fluent in that

language, library resources, residential facilities and financial support) and a sufficient number of students from one particular language-culture are available. Although these students may not be sufficiently fluent in English to understand lectures or take tests in the English language, they might be available for a program in their own national language. Under those limiting conditions, a bilingual curriculum presents several advantages.

(1) Bilingual curriculum programs would enable a separation of those students whose English language fluency is sufficient to compete with native English speakers in the class-room from those genuinely unable to compete fairly. Such a separation would work to the advantage of foreign students who are not fluent in English and who could concentrate on learning the specific skills of the curriculum without *first* having to learn English. Unless these criteria are separated, a foreign student not fluent in English is placed at a severe disadvantage. Contrarywise, the student whose English and U.S. acculturation are "too perfect" might be at a severe disadvantage later when he returns home.

(2) Applicants who are otherwise qualified in the curriculum but not fluent in English, could be considered for admission. As the national languages of non-English speaking countries become more important in our global village, the intelligentsia of those countries are—for instrumental as well as integrative reasons—increasingly depending on fluency in their own national language. By concentrating only on that international strata of the population who are fluent in English for applicants, the American university is making a political as well as an education decision favoring a particular "elitist" sector of the population in many non-English-speaking countries.

(3) A bilingual curricula would minimize the degree of "Americanization" required by foreign students in the foreign educational system. It has been my experience counseling foreign students at the University of Minnesota that many of the "successful" graduates who return home to Taiwan, Indonesia and Malaysia are more "bent out of shape" than their less fortunate "unsuccessful" dropout colleagues who have resisted the acculturating processes of the American academic community. The emphasis has been on the several years of a foreign student's educational experience abroad rather than the several decades of his service back home.

(4) Foreign students would live and study in cluster communities forming cultural "islands" in the university community. Although this would diminish the "quantity" of interaction with the surrounding community, it might heighten the "authentic quality" of interaction. Students not subjected to English language acculturation would make their own distinct contribution different from that of their English language educated counterparts.

(5) The curricular focus would be narrow and specialized toward a training certificate rather than a degree. Skill-specific training programs or narrowly-defined, problem-oriented curricula would limit the training to the specific need of foreign students, cutting through the otherwise inapplicable, degree-bound re-

quirements of traditional disciplines which frequently characterize a graduate program. Those curricula not immediately relevant to the foreign student's need would by necessity be eliminated. The arguments favoring interdisciplinary, problem-oriented education would apply to the defense of this program aspect.

(6) Foreign students would be drawn into such a bilingual program only from countries with sufficient numbers of qualified non-English speaking candidates. Limitations of resources in the more esoteric languages would obviously eliminate participation by students from these foreign countries. There are sufficient resources in some languages for specific programs to be established if those bilingual resources could be mobilized.

(7) Faculty for the bilingual program could be drawn from previous graduates who have already elected to stay in the U.S. rather than return home. In other cases faculty who are bilingual could be drawn into the program. Furthermore, bilingual, upper level graduate students could supply a teaching resource in their national language. In some instances upper level graduate students are not sufficiently fluent in English to teach a class of American undergraduates and are unable to secure a teaching assistantship for that reason. They may well find a place in such a bilingual curricula however, utilizing this unique potential for international education.

(8) Highly skilled U.S. faculty in residence could participate even without knowledge of the foreign language through interpreters when necessary. Many of the more qualified American professors are unwilling or—for professional reasons—unable to go abroad to teach for a term. The only way the foreign student could have contact with those individuals would be by coming to the U.S. university where that professor is teaching and might be willing to invest some time in a course on his specialty without having to leave the country to do so. We could, of course, send the American professor abroad for a year on leave, on sabbatical or on a grant to teach in the foreign country itself. This option has tremendous advantages in educating the American professor (although some have been known to exploit the vacation potential of such an assignment) and does not compete with this proposal.

(9) Foreign students would have access to library, computers and other U.S. educational facilities not always available back home. It is sometimes easier to transport the student to these facilities than to transport to the facilities the student in his home country, although both approaches supplement one another, and neither program excludes the other.

(10) The home country political restraints on curricula, educational resources and free discussion would be less likely to supersede academic inquiry in the "removed" setting. The host university would be able to certify training if the program was under the control of that university. In the developing countries in particular political expediency frequently acts as a powerful influence on educational planning, determining many aspects of the curricula. A removed setting would seek to minimize the political restraints on academic investigation.

(11) The status of an education abroad would be available to non-English speaking candidates. Qualified applicants who would not otherwise have any contact with university education from English speaking countries would have the opportunity to participate in our educational process. The effect would be to broaden rather than restrict options for higher education.

(12) A foreign student's reverse culture shock when he returns home would have been minimized, facilitating re-adjustment through minimizing alienation. The student would be able to come to the U. S. for an education and return home as rapidly as possible before becoming an alien in his own culture. Likewise, the shortened period of preparation for and involvement in foreign study would increase the likelihood of his returning to take up the position he vacated before that opportunity was swallowed up by his rapidly changing home environment.

(13) The likelihood of non-English speaking foreign students remaining in the U.S. after graduation and contributing to the brain drain would be minimized. An intensification of the brain drain is not to the long range advantage of either the host country or the donor nations. The sending country may be more likely to invest educational funds in non-English speaking educational programs with this increased likelihood of their returning home, and be less distrustful of the American educational experience.

(14) American students would have the opportunity to interact with an enclave of foreign students in a more realistic culture setting. The real problems of communicating across cultures would be presented to the host university, acculturating the domestic students' body to the realities of a modern world that includes languages other than the English language and cultures other than the American culture. As an example of one advantage, degree program foreign language requirements could be fulfilled by American student degree candidates joining the bilingual program and successfully completing a course in the candidate's own field in a foreign language.

The bilingual alternative is offered not as a substitute for the existing programs among English speaking foreign students, nor as a substitute for educating the foreign student in his home country rather than in the U.S. but as a fifth option to increase institutional flexibility and "readiness" in situations where facilities are available to pursue this bilingual option. □

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*(Continued from page 3)*

Universities are established and Colleges are opened; but hardly they are fed. There is no definite standard as regards the Universities and Colleges. Needless to say that political pressures has tremendously prevailed in having more Universities and Colleges. Although political purposes were served temporarily, if one makes an assessment, we will find that those who felt happy over having new Universities and Colleges in their areas or according to their wishes, later expressed utter dissatisfaction for

inadequate finances. The feeling that no more new Universities be established and no more Colleges be opened without definite and positive justification has become stronger than ever before. Absence of the necessary finances meant absence of proper facilities and consequently unhealthy education. We have tried to educate the Youth through Magazines, Cinemas and Television about the sophisticated education imparted in foreign and in some of the fortunate Institutions of India. None has control over the desires that develop in the millions of Youth. When to their disappointment, they find utterly inadequate facilities in respect of accommodation, furniture, Library, Laboratory, Equipment and other things including ill-equipped teachers, it is but natural that either they allow themselves to be ill-educated or revolt against the situation. Much of the discontentment of the Youth can be traced in this unfortunate situation. In the post-independence period, on account of open-door policy of admission, a good number of students join Colleges without any purposes. They either do not need the Collegiate education or are not mentally fit for collegiate education. It is, therefore, of immediate need that such admission should be curbed. If the present policy is followed and if the present inadequacy of funds continue, more disastrous situation will await us.

What is really needed is a proper pattern and machinery through which the students, after schooling, would be selected for collegiate education and the already established Universities and Colleges should be properly financed so that they can provide the necessary physical and professorial facilities and thus achieve the objects for which they are established.

In order to correct the incorrect, it would be proper that the University Grants Commission appoints a High Power Committee with powers to appoint sub-committees for each State with the following Terms of Reference :—

- (1) To study the history, background and objectives of each University.
- (2) To find out how far each University has been able to achieve the objectives for which it has been established and point out the failures, with reasons, how and why the University has failed in fulfilling its objectives including the inadequate finances, mis-directions of approaches of development etc.
- (3) To suggest how best, through co-ordination, the University should be reshaped having regard to the resources already at the disposal of the University and the resources that may be possible to raise from State and Central Governments.

The Committees should make recommendations in respect of Universities of general character.

Unless proper co-ordination is made and duplication avoided without loss of time, loss of academic quality and resources is imminent. □

# Aspirations of Youth for Development

Tisa Balasurya

IN THIS discussion we have to bear in mind that there are many categories of youth in the Asian countries. We can refer to rural youth, urban youth and plantation youth; affluent and poor youth; youth in educational institutions; university students and those outside the educational system; employed youth and unemployed youth. Youth has also to be understood in relation to the personal and social backgrounds. The classification according to sex is very important because young men and women can have significantly different aspirations, both as individuals and as groups. Other factors that influence youth in general are their education, their socio-economic environment; the nature of parental authority exercised over them during different stages of life; their personal status in peer groups; the role and responsibilities of the families and the community. Youth aspirations and behaviour depend on these factors and their inter-relationship.

Youth aspirations have to be understood also in relation to their social options. In this we can divide the youth into categories such as social conservatives, moderates, radicals, revolutionaries and the 'drop-outs'. Even in these groups we would have some who would be more aware and concerned than others. Some may be merely propagandists or opportunists. In each of the groups we find a minority that would be consciously dedicated and militant activists.

Youth differ according to their age groups. We may take 15-25 years as the age group of youth. Persons of 15-17 years have quite different aspirations from those of about 18-22; and these in turn differ from the age group 23-25 years.

Youth are also different according to the socio-political environment in which they live.

Thinking of the aspirations of youth we can reflect on the aspirations that may be common to youth of all periods of history. In this sense youth is a stage in which the human person generally shows greater idealism, preparedness to experiment and change, is impatient concerning existing situations and has a tendency towards indiscipline. Youth is also the age of courage and daring as well as revolt

and dissidence. We shall try to study here more the characteristics of youth in our time and in our countries. This will indicate to us how the aspirations of youth have been influenced by the particular phenomena that are most specific to our age.

Similarly taking our times there are certain characteristics which are Common to all contemporary people and not only to the youth. Our task is to see how these changes affect in a special way the aspirations of youth in our time. Today many persons have to face the problems of unemployment, uncertainty, powerlessness, search for identity, etc. How do these affect the aspirations of youth today? We shall consider globally the aspirations of youth as persons for themselves and their aspirations for their national development for the two are closely interconnected. Due to the wide diversity of groups of youth in our countries, we can only mention some generalizations which can be applied to a given group with many possible reservations.

## Aspirations of Youth

The aspirations of youth are not all necessarily praiseworthy. Youth like the rest of human nature is prone to selfishness and evil, both as individuals and groups. One can think also of the less praiseworthy impulses and motivations; the desire to dominate, to acquire selfishly, to possess individualistically, to use others merely for self-satisfaction, to be untruthful, to be cliquish, clannish and narrowly communal, to run away from difficulties, to alienate oneself from the suffering of the poor to benefit from the exploiting system, to go up the social ladder through sheepish conformism. However, in this paper the reference will mainly be to those aspirations of modern youth which have a positive value, even if these are misunderstood by others, especially elders.

The youth, like others, seek selfhood, self-expression, and self-realization. They want this for themselves, their group and this generation. They want acceptance for what they are in themselves. They would like this to be as frank as possible without many inhibitions that society places on them. This is true of both young men and women, and also of the interrelations between persons of the two sexes. They want to be cared for, without being suffocated with attention; left free without being neglected and forgotten. They want to try to shape their own destiny and are yet aware of the enormous limitations to this within themselves and in society; hence their anxieties, fears, insecurities, frustrations, and their joys in achievement.

### 1. Authenticity

Modern youth lay a great stress on frankness, openness and honesty. They are tired of the dishonesty, duplicity and hypocrisy which they see around them specially in adult society in a systematic way. They are sensitive to the prevalence of double standards in people. They are disillusioned with the formalities that have been built to bolster different organisations and systems in society at different levels. They want to get beyond the barriers of formalities to the heart of reality and to more sincere values.

Extracts from a lecture delivered at a U.N. Seminar in Karachi by the author who is from Sri Lanka.

They are contemptuously angry with the prevailing values and standards. They lay almost cynical stress on the animal characteristics of man, the malodorous nastiness, the raw crudeness, the blatant egoism that they notice in society, specially its higher echelons. They like to expose the nakedness of the powerful, the fawning obsequiousness of the followers, the inhumanity of the rebels themselves when they come to power. Yet youth too are subject to the temptation of not being authentic.

## 2. Freedom

The modern youth are aware that youth is an important sector of modern society; and that their countries depend on them for defence specially in times of war and other difficulties. They are also conscious that their knowledge of world affairs and of science and technology is often more up to date than that of the generation of their parents. Many of the attitudes of present day youth flow from such an awareness of their numbers, their education and their sense of frustration with the values which prevail in adult society.

Youth wants freedom in the organisation of their own lives—their leisure, their social life, their relations with each other, their studies, choice of career, marriage, life style, bringing up children

## 3. Justice

Youth today has a greater awareness of a concern for justice than perhaps ever in the past. They are particularly sensitive to the needs of social justice at the level of local communities, nation, states and the world at large. They want more respect for the human person and for his rights.

Their desire to build a better world makes them rebel against the present power systems; this often leads to clashes of a violent nature. They resort to means which may be even illegal. They then, give the impression of a generation determined to break down the present world power system. The youth of Indonesia were responsible for the change of government in Indonesia in 1965.

## 4. Questioning Scepticism

These situations lead youth to a point of questioning the ideologies to which adult groups adhere and according to which the world is divided into rival and warring camps. The fundamentals of these 'isms' are questioned in so far as they do not relate to integral human needs and cause unhappiness and divisions. Thus there is a certain scepticism about and indifference towards ideologies such as capitalism, communism, nationalism, racism, catholicism, etc. Youth wants action that is related to problems, and not mere ideological postures for their own sake.

They are tired of meetings, seminars, discussions, constitutions, conventions and a dialogue that do not lead to action. All these seem to favour the existing power system with its corruption and favouritism. They do not believe in the paternalism of authorities who do not want real change. They are sceptical about puritanism of sexual morality that co-exists with exploitation of the socially and economically weak.

## 5. Credibility Gap

All these make them disbelieve adult institutions, attitudes, stances, and even values. Some come to the point of not trusting them any longer, at least till they see concrete results. Delay concerning practical action is regarded as a sign of unwillingness to act. They want quick action for they are fed up with the 'wait and see' prudent policies of the 'establishment'. There is a certain cult of immediacy—action here and now is more valid than any promises of future action.

In this frame of mind religion is also somewhat suspected by youth, unless its adherents genuinely inspire relevant action specially for justice. They question the meaning and value of religious ideologies, rituals, prayers, organization, institutions, power system, and even the ultimate sanction of after-life. God himself is judged by such criteria. Or rather the existence of a God according to the image created by many 'believers' who are indifferent to human problems is seriously doubted.

This is not so much because they do not want an ideology, religion, authority or institution; but they fail to see their usefulness as presently articulated or exercised. They are not so much irreligious as averse to a religion that seems to them more formalistic than genuine, more conventional than sincere. Youth want spirituality in different forms. They favour an open, honest, sincere, authentic religion that commits itself seriously to human values, cost what it may even to religious institutions themselves. Youth of different religious groups naturally react differently to these factors.

## 6. Relevance

Modern youth want thought and action to relate to real problems—and that at their deeper levels instead of merely taking things for granted. Since they are aware of the inadequacies of many aspects of contemporary society they want study and action that has a realistic relationship to them.

They are afraid that one cause of the maintenance of an unjust *status quo* is the irrelevance of many of the lines of action which are undertaken by even sincere groups. In this sense they seem to be anti-institutionalist. It is a desire for a reform of structures even when it takes the form of an anarchical attitude towards existing institutions and structures.

They want institutions and rules to have meaning to their lives and values. There is a questioning of mere formalism, traditionalism or conventionalism which an earlier generation may have taken for granted. Yet youth themselves are compelled to fit into the given opportunities and institutions of a society. They too find it convenient to conform.

## 7. Radicalism in Options

In many countries, specially in South Asia and Latin America, youth are becoming more dissatisfied with the existing political, social and economic institutions in their countries. They want more fundamental and radical changes in these. They want to go beyond social service to social reforms of a structural nature. This leads them to contest present day values attitudes and structures in society

including the state. Though a good proportion of youth is generally conformist, a small militant group of activists demand reforms.

The values which are appreciated are specially those of risk-bearing, courage in facing a challenge, taking a stand on worthwhile issues, contestation of injustice, etc

### 8. Peace

Yet this radicalism is generally in favour of issues such as peace, justice, redistribution of wealth and incomes. On the contrary, the conservatism of adults tends to support war (as the U.S. involvement in Vietnam) and preserving an unjust *status quo*. Youth combine demands peace, desegregation of race with a certain permissiveness in morality in some other lines like sex. The concept of peace is also changing. Youth are questioning in different countries whether 'peace' as understood generally excludes violence to the under-privileged.

### 9. Participation

Youth wants to be taken seriously by those who make decisions for them even when they do not want full responsibility. They want to be consulted, heard, listened to, trusted and confided in. They do not like authoritarian ways of the past when youth was hardly consulted in many areas of public life or even in colleges, and in the families. They dislike paternalism, even when they might benefit from its benevolence. They disapprove of condescending domination as this is wanting in respect for their personalities. They want to share in authority and responsibility. They want to be able to contribute their experiences and aspirations towards decisions that affect their lives. They want an open dialogue in which views are shared genuinely. They are happy when adults speak to them with respect and confidence. They want adults to treat them as friends and cooperators, rather than as inferiors and minors. They often complain that even in voluntary agencies the youth are not given opportunities of sharing in decision making.

When they feel slighted they tend to revolt. When they are given responsibility, generally they are keen to measure up to it and are more desirous of and demanding in discipline than even the adults. Authority among the youth is often best exercised by youth leaders who have responsibility or are entrusted with it. They then make up their own norms and codes of ethics even on intimate personal relationships.

### 10. Creativity

Originality, dynamism and inspiration are appealing to youth of this generation, perhaps even more than the youth of earlier times. They have seen many changes in the short period of their experiences and are prepared for many more.

### 11. Crisis of Identity

In this overall situation the youth are experiencing a crisis of identity. They ask themselves what is their role in society. How far are they right, to what extent can they change society? They are not quite sure whether they should accept the norms of a given society. Yet can they afford to opt out of it—be a dropout in some countries, be a Hippie? Should they compromise and join the service of the institu-

tions the business houses, Government, armed forces? What feasible options do they have? Or should they attempt to change society by other means such as peaceful action that is legal or illegal, or even by violence. They are not clear as to what type of alternative society they want.

In the complex atmosphere, the youth feel a closeness to each other more than to adult groups, specially those which are less personal. They even feel a distance from their parents. For them the peer group is a meaningful form of relationships. Within a group of the same age they feel a lack of inhibitions, a warmth, an understanding, a sense of belonging and togetherness. They too crave for community: but a form of community that has more genuine sense of oneness, fellowship, freedom and sharing than the more formal communities of an older society such as religious or university communities.

The peer group is also an area for experimentation for trying out novelties on themselves—as in the case of drugs, sex and the permissiveness of modern society. Through such experiences they feel they assert themselves and search for fulfilment even if it be temporary, superficial or illusory

### 12. Within Social Institutions

(a) In the family, youth want to be accepted as persons in their own right, with their values which are somewhat different from those of the traditional parents. The parents, on the other hand, find it difficult to think of their sons and daughters as grown up persons. They tend to be protective. They like the children to accept their own values, specially not to question the 'system' in society

(b) In education, factors which contribute to the present youth unrest include: - (1) absence of clear goals, (2) absence of value orientation, (3) irrelevance of education to present needs, (4) rather primitive and oppressive methods of education, (5) absence of participation of students in academic and disciplinary matters, and (6) outmoded system of examinations and type of textbooks and lack of facilities. In many of our southern Asian countries, education is a process by which the youth are rendered unemployable due to their alienation from manual work and the skills related to the country's present phase of development.

(c) In the Youth Movement, the more energetic youth want the movement to be really one of youth and not adult-dominated as is often the situation. Youth movements have generally tended to be recreational and/or social service oriented. Presently there is a trend towards engaging in action for fundamental social change. The differences among the youth lead to problems within the movements: some youth want radical changes while the majority are generally rather conservative. Hence problems of goals, methods and even tactics.

When youth movements are sponsored by the state or voluntary agencies, these bodies tend to determine the goals, programmes and projects of the youth groups. This sometimes leads to such groups catering only for those youth who accept the ideology and programmes of the sponsoring agencies. Others tend to be kept out of such groups.

# From the Press

Prof. V. V. John writes in "The Times of India" under the heading '*Open Book Examinations*'

A SPOKESMAN of the University Grants Commission has stated that the commission does not share Mr. H.N. Bahuguna's enthusiasm for introducing open book examinations in universities and colleges. On the contrary, the commission was apprehensive about the 'repercussions' that the innovation might generate and pointed out that the experience of open book examinations elsewhere remained inconclusive.

The commission's dismayed reaction and its intent to have the matter further studied come of its unawareness that the Indian Institutes of Technology, for instance, already have open book tests as part of their regular examination schedule and that there have been some authoritative pronouncements from Delhi on this matter.

If the commission has sent across the road to the office of the Association of Indian Universities for a copy of the report of a seminar held in 1971 on examinations in higher education it could have learnt that open book examinations, along with other methods of academic evaluation, were the subject of expert study at the seminar and that the report made some attempt to indicate the areas and levels in which this type of examination would be useful.

I am perhaps forgetting that, in Delhi, reports of seminars are an end in themselves and not a prelude to action, and that expert advice is what one gives but does not take.

In open book examinations, according to the Association's report unlike most other tests, the students has free access to books, documents or any other material which he may require in order to be able to solve the questions set to him. The questions do not demand rate learning;

instead they demand the ability to discriminate and judge. What the student does is not to reproduce any material which can be conveniently found in a book or a document. He consults various books and documents, establishes for himself the relevance of what he finds there to the problem that he is handling and then goes on to state his case. The cogency of his statement will depend upon his ability to have established the necessary connections and to reconcile conflicting or contradictory facts.

"As should be apparent, this is a kind of intellectual skill which is displayed mainly in those higher ranges of argument and analysis which are not within the reach of every student. It is only the distinguished students, operating mainly in fields like law, accountancy, business management, operational research and such other disciplines that are expected to have this kind of skill.

"To jump from this plane of thinking and to go on to suggest that open book tests should be permitted to the vast mass of students even at the undergraduate level is to completely misunderstand the scope and purpose of open book tests. These tests are meant to test the higher abilities and not to provide an alibi for poor instruction and lax conduct of examinations.

"Over the last few years, as cheating in examination has become more and more of an academic and social menace, several ingenious people have come forward with the suggestion that open book tests would solve the problem. For reasons stated above, the suggestion is both puerile and pathetic. To believe that a tool of assessment, even if misapplied, can lead to the right kind of assessment is faulty logic." (*Examinations In Higher Educa-*

*tion*, pp. 23-4).

The approach of the report in this matter is perhaps too conservative and traditional. Undergraduates too can be challenged to exercise their capacity for discrimination and judgment over data provided through books and documents. To give but an instance from my own teaching experience, I remember a question that students at the intermediate examination were asked many years ago. This was during the war years, and one of the texts prescribed was R. C. Sheriff's anti-war play, *Journey's End*. The question asked was: "would a performance of the play by your college dramatic society at this time be an offence against the Defence of India Rules?" This is the sort of question that could be asked in an open book test. Neither the text of the play nor a copy of the saw mentioned, would provide a ready-made answer. The candidate is being asked to exercise his capacity for forming opinions, instead of drawing upon his memory.

## SUPPORT

But the support that open book tests have secured in certain quarters comes from two entirely wrong notions. One is that the traditional examinations are in need of replacement by entirely new alternatives. The other is that the way to prevent unauthorised 'copying' in examinations is to provide authorised material to copy from.

It will be noticed that those who denounce the traditional type of examinations have not been known to acknowledge anything spurious about the examinations that they themselves passed. All decline dates from some time after they left college. And the reforms suggested by such people are inspired by fear of the wrath of the lowdies that cheat in examinations, and not by any desire to introduce more reliable and challenging me thods of academic evaluation. In the hands of such cowards, innovations such as internal assessment, objective tests, question banks and the open book tests are bound to produce greater fiascos than any thing the

old types of examinations have known.

In fact, it would be wise to insist that no university or college that does not have the courage and the capacity to conduct the traditional examinations properly should experiment with the alternatives that are now being talked about.

Considerable misunderstanding has been generated, not only in the U.G.C.'s office but also elsewhere by the brief reports of the Uttar Pradesh chief minister's suggestion that open book examinations would put a stop to cheating in examinations. Surely, he could not be so simple as to suggest what could be called a homoeopathic cure for the malady of cheating. He presumably wants universities to outwit malpractices with questions for which ready-made answers are not available in the books.

Some time ago, when turbulence over examinations came up for discussion in the Lok Sabha, Acharya Kripalani entertained the House by producing a specious argument in favour of open book examinations. He pointed out that grown-ups, functioning in their offices, courts, legislatures and other places of work, refer to books and other material in dealing with their problems, and why shouldn't the young, being trained for the responsibilities of adult life, do likewise? The answer is simple. It depends on what you are testing.

## GUIDANCE

In Calcutta, I was recently told of a law examination, for which almost all candidates arrived each day, suitably equipped with books of ready-made answers to a comprehensive range of questions. Even so they needed help, for they would not know which answers to give to which questions. They however had the aid of one earnest and knowledgeable candidate, who, at the beginning of each session, quickly disseminated the necessary guidance. The arrangement had the benign approval of the invigilator, who wanted no trouble anyway, and everyone

was happy. This probably is the sort of development that has frightened the University Grants Commission.

No one has suggested the open book examination as a complete alternative to the traditional type of examinations. It is not difficult to identify the areas in the curriculum where the challenges of this new method could be offered. These do not exclude the undergraduate level, as the report of the Association of Indian Universities would suggest. But it may not be practicable in large-scale external examinations such as our affiliating universities conduct. The need for smaller examination units, however, now exists for almost all types of examinations, except perhaps the objective type, if they are to function at all reliable methods of

academic evaluation.

In small unitary universities and in autonomous colleges, it should be possible to work out a new pattern of examinations, in which, at the undergraduate stage, the tests in the first and second years could be limited to internal assessment through oral and written tests, Objective and essay type questions, and theme-papers based largely on independent study. In the final year, the stress in the evaluation could shift from the information garnered to the capacity for using it to form judgments. This would be the stage at which open book examinations could be tried with advantage. It could be the beginning of obliging students to put knowledge to work, which is what they would be expected to do on leaving college

## Writing on Tutorials, in the "Economic Times", Nalanda Says:

DELHI University introduced the scheme of tutorials and preceptorials in April 1958 with funds provided by the Ford Foundation

The maximum number of students is between two and four in a tutorial group for B.A B.Sc. Hons. and M.A./M.Com./M.Sc and between six and eight for B.A. Pass B.Sc. General and subsidiary subjects in Hons. courses.

This small group meets once a week for English and once a fortnight for other subjects for a personal dialogue with the teacher to foster a system of education aimed at developing the capacity for intellectual initiative and self-reliance on the part of the students.

The dismal failure of the scheme is a telling commentary on the initiative, mental make up of our decision makers who often bodily plant the experiments being conducted in the Western society without examining their relevance in the light of our social conditions. Since the system of tutorials and preceptorials "was a success in Western universities and a foreign foundation was inter-

ested in experimenting the same here, so it must be accepted

The University Grants Commission appointed a committee last year to review the working of the scheme. The committee met some lecturers, principals of colleges, representatives of Delhi University Teachers' Association and Students' Union and some students. A questionnaire was drawn up and circulated to all the colleges to elicit information. The committee reached the following startling conclusions on the basis of views expressed by student, lecturers and principals:

(1) The scheme exists "on paper", "in air", "on the time table". "These are generally free periods" and "the scheme is intended to provide more teachers".

(2) The scheme has been interpreted differently by different teachers and modified to suit their convenience.

(3) Students and teachers take these periods casually and not seriously.

(4) Enthusiasm amongst students declines from the first year to the second and in the third year the tutorials become "question-answer discussion classes".

(5) While the tutorials and preceptorials period is of 50 minutes according to the scheme in practice such classes are held for 10 to 15 minutes, 15 to 20 minutes and in a few cases for 30 to 35 minutes.

(6) Teachers come to classes, mark the attendance, discuss and check some work and leave the classes. Whenever, a teacher has only a tutorial or preceptorial on a particular day, such preceptorials are generally not held.

(7) The scheme of preceptorials and tutorials as functioning in its present form has not proved useful and therefore, should be 'scrapped' and a modified scheme be introduced.

The scheme has proved to be a big flop in all the colleges barring a few women colleges where it is taken little more seriously. The logic of the situation demands that the scheme should either be completely scrapped or radically modified to lend some meaning to it. But unfortunately both teachers and students have developed a stake in this wasteful practice and they resent any serious change in it. While for teachers the scheme provides several free periods a week thus radically reducing their workload and for students it involves no additional burden. The teaching is looked upon by many students as a torture and this scheme provides them with a lot of relief.

This is not to suggest that there is something inherently wrong with the scheme as such. Teaching should primarily be a dialogue and this is possible only in small groups. Lecturing to a big class where teacher looks like a pulpit preacher addressing a silent mob is travesty of teaching. It builds a mystique around the teacher and he is gradually alienated from his pupils. In such a situation teaching in small groups is a necessary corrective but it presumes certain requirements which, by and large, are missing in the Indian universities, especially in Pass Course classes.

Tutorials and preceptorials scheme has been successful in West on selective basis and there is a right kind of motivation for students to engage themselves in quest for knowledge.

In the Indian Universities higher education is fast becoming a mass phenomenon and it is being pursued by most of the student's just to improve prospects for jobs and matrimonial alliances. The aim in most of the cases is to get the degree somehow and this is easier through preparing a small number of questions with the help of cheap 'guide' books which have a flourishing market in the Indian Universities. In such a situation the scheme should have been introduced on a selective basis for Hons and M.A courses. To extend it to Pass Course classes mechanically was a grave error which is being understood by everybody now but no one knows how to rectify it.

The U.G.C. Committee has recommended discontinuation of the present scheme and has suggested, in its place, a system of regular assignments including class tests with assessment and follow-up discussions. A teacher responsible for lecturing to a class will also be responsible for giving written assignments and follow-up discussions to the same class. The teacher will mark the assignments outside the class and return them to the students for discussion during one full period specifically provided for in the Time Table. Every student will have one period per paper per fortnight for carrying out the written assignment and within that same fortnight another period for discussion after evaluation of the assignment by the teacher. The marks of the internal assessment would be communicated to the university and they will be indicated separately as internal assessment in the marks sheet issued by the university on the basis of the examination conducted by it.

The committee appointed by the Academic Council of Delhi University has accepted the above

recommendations with one modification. It has suggested that each assignment group for the honours courses (main subjects) should consist of not more than 8 students and for the pass courses, and for subsidiary subjects for honours courses, it should consist of not more than 12 students. The number as suggested by the U.G.C. Committee is 15 and 30 respectively.

In essence, there is hardly anything new in the recommendations. Even earlier a teacher was supposed to give written assignments to the students in small groups followed by discussion later on. This pattern has been followed wherever the scheme has been taken seriously. Just to formalise some concept is a game of semantics which would not yield any meaningful result. The only innovation is the separate indication of marks obtained in the internal assessment in the marks sheet issued by the University on the basis of the examination conducted by it. This will have no sanctity as these marks would not contribute towards the result of a student.

The scheme failed primarily because of lack of motivation on the part of students as well as teachers. One can safely predict that the modified scheme will substantially meet the same fate as the original one. Teachers and students would soon evolve a formula to deal with the question of internal assessment. Students in many cases will be given marks in the internal assessment as they are given attendance at present. Though students are supposed to attend two third of classes in an academic session but a fairly good number of them appear in the examination without attending a single class. Such students comprise of bullies, leaders and their henchmen and teachers are always eager to have peace with them. Compulsory attendance has already been done away with at M.A level and it has been reduced to mockery at lower levels. The same fate awaits the system of internal assessment. □

# AROUND A CAMPUS

## Gujarat University

GUJARAT university has organised various types of students activities during the summer vacation which included Games and Sports-camps, Mountaineering training camps at Mount-abu, Reading Camp, Literature Appreciation Camps, Youth Leadership Training camp, N.S.S. Camps of Youth against Dirt and Disease' Cycle Trekking along the sea-coast in Saurashtra from Dwarka to Bhavnagar, Cycle trekking in the desert region of Kutch, Trekking in the Himalayas in the Manali region.

### I. Games and Sports camps

Coaching camps in Table tennis, Swimming, and Basketball were organised each for fifteen days duration at Ahmedabad with the help of State Sports Council's coaches and the University Coach. The information regarding these Camps is as follows :

(i) The Coaching camp of Table tennis was held at the non-resident student Centre Hall of the University from 1st May to 15th May 1975 in which 20 students participated. The services of Shri M.K. Desai, Coach of the State Sports Council were made available.

(ii) The camp for Swimming was held at Sardar Patel Stadium Swimming Pool of the Corporation on the same dates in which 17 students participated and for which services of Shri Jagjit Singh, the State Sports council coach were available.

(iii) The coaching camp of Basket-ball was held on the University Court by the University Coach Shri Nihal Singh

from 28th April to 11th May wherein 16 students participated.

### II. Mountaineering Camps

(a) Basic Rock climbing camps Mountaineering camps in which Basic Rock climbing technique, various techniques in Repelling, and Belaying are taught, were held at Mount-abu with the help of the instructors of the State Mountaineering Institute of Mount-abu. Three such camps, two for men students and one for women students each of 10 days duration, were held, in which 113 men students, and 39 girls participated. Two Men students camps were held from 11th April to 20th April and 4th May to 13th May and Girls' camp was held from 23rd April to 2nd May. It has been gratifying to note that the demand for such camps is so great that about 800 students applied to take training for such camps.

### (b) Snow & Ice Technique Training

This University deputes boys and girls to the Manali Institute of Mountaineering and gives them stipend. Four girls and two boys have been deputed for such training this year. Four more boys are also included in a special course started at Manali for the students of the Universities of Gujarat financed by a donation from Hari Om Ashram Trust.

### III. Reading Camp.

A reading camp of one week duration from 13th May to

20th May was organised at the University library. 25 students selected from various college, attended the camp. This was the fourth such camp organised by this University. Prof Yagnik, Prin. Mangalvedekar, Prof. Baxi and Prof. A Shah were in-charge of these camps. The students were asked to select books for their reading, they were taught technique of reading and grasping the ideas quickly and keep notes about it. They were also taught the use of library and lectures were given on famous books of various disciplines by persons of repute in that discipline. These students were also subjected to supervised reading. They stayed together in the University hostel and had the advantage of group life also.

### IV. Literacy Appreciation Camps

This time a new experiment was conducted by organising camps in acquainting the students to appreciate the well-known work of the famous authors of that language. Accordingly, the camps for the following were conducted.

English Literature  
Shakespeare.  
Gujarati Literature.  
Saraswatichandra  
(Govardhanram)  
Hindi Literature  
Premchandji and  
Maithilisharan  
Indian culture.  
Mahabharat

This was first time that such literature appreciation camps were organised. It was very fortunate that persons with repute in that language gave us support by accepting to organise these camps and that is why they were successful.

Prin. S.R. Bhatt, Prof. Digish Mehta and Miss Dawar were in charge of English literature camp. Prof. Anantrai Raval with Dr. Joshi, Shri Anirudh Bhatt and Prof. C. Bhatt were in charge of Gujarati literature, i.e. Saraswati-chandra camp.

Prof. Ambashanker Nagar with Prof. Randhir Upadhyaya and Shri Bholabhai Patel were in charge of the Hindi camp.

Shri Upendrabhai Sandesra with Shri K.K. Shastri and Prof. Nandi were in charge of the Mahabharat Shibir.

The language camps were organised for one week from 23rd May to 29th May and the Mahabharat or Indian Culture camp was organised from 13th May to 19th May.

Though the participation with regard to quantity was not very encouraging, the quality of the students who came, was very good. The cooperation of many well known literary persons of all these languages was easily available in these camps as many of them readily agreed to come to these camps to speak on various subjects given to them of the different aspects of these authors and books.

## V. Youth Leadership Training Camps

A youth Leadership Training Camp has been organised from 1st June to 7th June at Anjol a well-known Educational Institution in North Gujarat. Prin. V.A. Vyas Prin Akruwala and Prin. Parikh have agreed to organise this camp. The students will be given idea of Leadership and its various aspects.

25 students are attending this camp.

## VI. N.S.S. Camps

Six camps in the villages of Gujarat in different districts under the scheme of "Youth against Dirt and Diseases" had been organised. Each camp was of 10 days duration on different dates in the month of May. The work done in these camps was to clean the roads, prepare water closets, Aqua-latrins, Smokeless hearths, guide the people for cleaners habits, innoculation to children, Recreation programme etc.. About 300 students attended these camps.

## VII. Cycle Trekking along the sea Coast of Saurashtra

A cycle trekking of about 800 km along the sea-coast of Saurashtra beginning from Dwarka upto Bhavangar was organised for 10 days from 12th May to 23rd May. Shri Haribhai Patel of the S.V. Arts College, Ahmedabad was in charge of the Programme. 12 students participated in this new adventurous activity in this Summer heat. However the students enjoyed the programme very much since they were received very well at the places and the villages they visited on the way. It was a thrilling experience for the participating students.

## VIII. Cycle Trekking in the Desert Region of Kutch

This was a different type of adventurous activity. It was second time that this university organised and so it helped us a great deal. This year it was organised from 18th May to 28th May. The group collected at Adipur in Kutch with their cycles and started towards Bhuj on the 18th May. The group leader were Shri Narsibhai Desai from Arts-Com College, Idar and Shri K.G. Sanischara from Arts-Com. college, Mandvi.

From Bhuj they went to Khavda and from Khavda to India Bridge which is very near Pakistan Border. From India Bridge to Pachham to Nava Betara and there to Nakhtrana. They went back to Bhuj from where they went to Rampur Vekra Jungles. From these jungles to Bhadreshwer a well-known place of Jain Temples and from there they came back to Adipur. Though only eight students joined, they enjoyed very much and it was an experience of all together a different type. They have to pull on for long hours without water and also experienced actually the deserts Storm (Andhi).

## IX. Trekking in Himalayas

A trekking programme of the same type was organised earlier in June 1972 from Gangotri to Badrinath via Gango-tiri Glaciers and Kalindi Ghat. This time the trekking is organised in the Nanali region. Twenty students, with Shri Kanak Dave the Assistant Director of Youth Welfare as leaders and with other two trained helpers will start on the 11th June from Ahmedabad and will reach Manali on the 14th. From Manali they will go to chhika to Hemtagam which is 11000 ft. From Hamtagam to Hamta Pass which is 16000 ft and Hamta Pass down to Lahul Valley at 8000 ft. and again go up to Rohintangpass 14500 ft from where they will come back to Manali on 22nd or 23rd June. They are expected to reach back Ahmedabad on 29th June. This is being organised with the financial help from Hari Om Ashram Trust and it is going to be a Inter University Group of students selected from the various Universities of Gujarat who have done some Mountaineering Training.

# ROUND UP

## Plan to Expand South Delhi Campus

THE Delhi University is launching upon various academic and administrative schemes to strengthen its newly instituted South Delhi campus.

The major bottleneck in its proper development is considered to be its accommodation. The authorities are looking for a new building. Negotiations are on for securing the Patiala House complex for the south Delhi campus, which is presently housed in a small building in South Extension

While the stress is being laid on a planned and a rational development of the South Delhi campus, the administrative machinery is likely to be decentralised to avoid various academic and non-academic difficulties.

Detailed plans of development of South Delhi campus have already been submitted to the University Grants Commission about two months ago. A formal clearance from the UGC is awaited

Strengthening of the campus has been suggested by a committee which was appointed by the Vice-Chancellor in January this year to define the concept of the South Delhi campus. The committee is understood to have expressed its opinion strongly against winding up the campus. Instead, the committee has suggested shifting of the campus to a better place and introduction of some new courses to give a new pattern to the post-graduate education. The campus should also provide a new leadership for developing undergraduate courses in South Delhi colleges. Introduction of courses like biochemistry, genetics, microbiology were also suggested.

The committee is also understood to have laid criteria for

continuing or starting new post-graduate courses in the South Delhi campus.

On the basis of these criteria, the university is understood to have decided to continue six of the nine departments established so far. The authorities seem to have come to the conclusion that pressure of admission was not high enough to justify the continuance of courses in history and philosophy in the South Delhi campus. As regards mathematics the opinions varied. The evening classes in business management are likely to be shifted to the South Delhi campus.

Regarding psychology, the committee is understood to have favoured the idea of starting this discipline in the South campus but the question of duplicating the very costly laboratory equipment at two places—central campus and South Delhi campus—seemed to have hampered a final decision.

As regards the under-graduate education, the authorities are understood to have decided to open an under-graduate library after the South Delhi campus is shifted from its present site to be a better place. Attempts are likely to be made to open more libraries in South Delhi. Facilities for sport health and other extra-curricular activities are also proposed to be provided.

The university authority intends to delegate all powers for administrative decisions in regard to admissions, migrations, change of subjects and various other matters. The South Delhi campus might also be asked to organise and conduct part of the university examinations.

## V-C's Pay

THE University Grants Commission has raised the salary of the Delhi University Vice-Chancellor to Rs. 3,000 per month.

This was announced recently at the University's Executive Council meeting.

Till now, the Vice-Chancellor drew a salary of Rs. 2,500 per mensem.

The pay raise is effective from January 1, 1973.

## No Separate Varsity

THE University Grants Commission does not favour the setting up of a separate affiliate university for medical sciences in any State.

A UGC spokesman said that such a set-up could only function as a body for conducting examinations—something the existing university system could take care of.

The commission's view came in the context of a proposal from Karnataka for a university of medical sciences. The proposed university was intended to affiliate all the State's colleges in medicine and allied fields.

There have been fears that if such a university came to being it would set an unhealthy precedent and might trigger a chain of single disciplinary universities.

This would only lead to an expansion of the university system without effecting real improvement in the educational standards.

The spokesman said the commission, however, favoured the setting up of unitary universities of medical sciences, like the All-India Institute of Medical Sciences, which cannot affiliate colleges outside their own campuses.

Moreover, he said, a university of the kind proposed by Karnataka was not likely to promote research work, isolated as it would be from other disciplines.

Even unitary universities like the Indian Institutes of Technology, which started out with rather limited courses of studies such as

sciences and technology, had later on taken to such varied subjects as humanities, he pointed out.

## Smoking's harmful effects

TWO in five heavy smokers will not live to pensionable age—this is one of the depressing facts contained in *Smoking*—a booklet published recently by the British Medical Association. Its contents were outlined on BBC World Service.

The scientific evidence of the correlation between smoking and lung cancer, coronary heart disease and chronic bronchitis is incontestable: it is borne out by statistics.

In addition to the "big three" diseases, says the booklet there is also evidence that cigarette smoking delays the healing of gastric ulcers, may cause healed tuberculosis to become active again, plays a part in the causation of some cancers of the mouth, voicebox, gullet and bladder.

It can even have an effect on how young you look the booklet tells us that people who smoke cigarettes regularly have a degree of skin-wrinkling appropriate to non-smokers who are twenty years older.

Finally, there is the direct harmful influence that smoking by a pregnant woman can have on the growth of her baby.

If you smoke you are not only harming yourself, but even those around you who are non-smokers. There is increasing evidence, for example, that the carbon-monoxide level in the blood of non-smokers in a smoke-filled room rises as if they had themselves been smoking, and that children from families of smokers suffer more respiratory disease than those who come from families of non-smokers.

And if you are a smoker it is very likely that your children or your younger brother or sister will eventually acquire the dangerous habit.

Dr Alfred Yarrow, the author of the booklet, a Senior Medical

Officer at the Government's Department of Health, points out that smoking is less common among children who are by and large successful at school either academically or in sporting activities.

What about giving up? Doctor Yarrow does not underestimate the difficulties involved. To give up smoking—he says—you have to convince yourself that you *should* stop and second that you *can* stop.

He suggests that having listed the health risks, you also think of the obvious financial benefits. Not only can you be healthier and fitter, but also richer.

## Search for Medical Talent

THE Indian Council of Medical Research (ICMR) has initiated a talent search programme to "pick up" every year 25 medical graduates with brilliant records immediately after their graduation and groom them for medical research.

According to Dr. C. Gopalan, ICMR Director General this is one of several new schemes to arrest brain drain and generate over the years a nucleus of top class biomedical research workers in the country.

The cream of young medical talent is identified through an all India competition and the first batch of 25 will start their programme next month.

During the three-year programme the young medical graduates will work for post-graduate qualification and undergo ICMR conducted training courses in 12 frontier areas of biomedical research such as the use of isotopes in medicine and new advances in fertility control.

According to Mr. Gopalan the scheme will generate a "pool" of young medical graduates well trained in modern biomedical research from whom "selection to the permanent research cadre in the ICMR can be made".

## Biggest Brain Drain

THE biggest brain drain from India has been from among architects, nearly 3,000 qualified practitioners of the profession being abroad against 5,000 working in India.

The new affluence from oil has drawn 400 Indian architects to the West Asian countries in the past four months alone.

Earlier the USA and Britain had attracted 1,500 and 700 architects respectively.

Most of the nearly 450 graduates from the 15 Indian schools of architecture every year, are therefore, lost to the country when they fail to find work for them. This is so despite the fact that there is only one architect for a population of 180,000 in India against one for 18,000 in Britain.

With only the most rudimentary attention paid to architecture in most towns and practically none in the countryside, the demand for architects has been very little, indeed in the country and most of those passing out of the schools of architecture have found little use for their services other than as assistants in the offices of builders and the few firms of architects which secure the larger contracts.

Latterly, with the drastic cut in public building works as well as the slump in private construction, there has been even less to do for at least the younger architects.

## Prof. Bhakshish is Vice-President ICCE

PROFESSOR Bhakshish Singh, Director, Correspondence Courses, Punjabi University, Patiala who had gone to England for participation in the 10th World Conference of the International Council for Correspondence Education, has been unanimously elected Vice-President of the International Council for Correspondence Education for the term 1975-78.

194 delegates from 35 countries of the world attended the Conference.

Professor Bakhshish Singh contributed a paper at the Conference on "The Role and Organisation of an Ideal Distance Education Institute". The paper evoked good discussion and was greatly appreciated by the delegates.

### Home Science—integral part of Agriculture

THE Scientific Panel on Home Science, constituted by ICAR, sponsored a three-day workshop at PAU to work out the curriculum to be followed by home science colleges in agricultural universities.

Dr M S Randhawa, Vice-Chancellor, who opened the workshop, hosted by College of Home Science, suggested that the subject of home science be introduced in all the girls' schools throughout the country.

For harmony in the home, it was necessary for the housewife to be educated. With the change that has taken place as a result of green revolution, he said, "there is a need to improve the personality of village women, who have been neglected so far". Since women were the nucleus of a family their education and knowledge of home management concepts needs to be strengthened.

Dr Randhawa cautioned the scientists not to stick to the fossilized concept of traditional home science syllabus but to make effort "to join the urban and rural currents".

About 20 delegates, representing heads of home science institutions in the country and other experts participated.

Speaking extempore, Dr Swaminathan said that any visitor to the interior of the country could see that women played an important role in agriculture. "Home Science is also an integral part of agricultural and it is unfortunate that it has assumed a restricted image in the public mind", he added.

Amidst applause, Dr Swaminathan disclosed that the Executive Committee of the Indian Science Congress, which met at Calcutta recently, had decided to include

# Make Secondary Education terminal

—Jatti

THE Vice-President, Mr. B.D Jatti, advocated the need for diversifying the curricula in secondary education and for vocationalising it "as much as possible". Admitting that this was a difficult programme he said without achieving it there was hardly any chance of reducing the pressure on the university system.

The Vice-President was delivering the valedictory address at the concluding function of a two-week orientation course for principals of kendriya vidyalayas in educational planning and administration at the National Staff College for Educational Planners and Administrators

The first batch of 20 principals from various kendriya vidyalayas attended the orientation course which is designed to acquaint the principals of about 200 such vidyalayas on the new education system being introduced.

Mr. Jatti suggested while vocationalising and diversifying secondary education attempts

'a forum on home science' when it meets next at Waltaire.

He urged the home scientists to initiate only such projects which would, after some time, run on their own momentum. His suggestion to nutritionists was to launch operational research projects in villages, like agricultural polytechnics (*Krishi Vigyan Kendra*). The home science discipline could also operate through these *kendras*. He also called for developing low cost methods for drying grains.

In nutshell, the three-day workshop strongly recommended that home science should be included among subjects for competitive examination for IAS and other class I services.

Dr Swaminathan had earlier hoped, that in view of the International Women's Year being observed, the UPSC would accede to this proposal.

should also be made to make it terminal. This could be achieved only by ensuring a good job for a student completing secondary education. If, as things have turned out now, the bachelor degree remains in effect the minimum qualification for all good jobs, then secondary education can be expected to be terminal. It would remain a preparation for the university, as it is now.

He was of the view that by splitting into two parts the secondary education, as in America, or Japan, would make it possible to introduce the principle of selective admissions at the beginning of the second part when the children were much elder.

Mr. Jatti expressed satisfaction that the new pattern of 10 plus 2 plus 3 had been adopted by many states and hoped the programme would be completed by the end of the Fifth Plan and that the country shall have secondary courses of four or five year in all parts of the country.

### New Courses at Tirupati Polytechnic

A COURSE in printing technology would soon be introduced at the Tirupati Polytechnic taking advantage of the University and T.T. Devasthanams printing press where students would be given practical training.

This was stated by Mr. Bhattam Sriramamurthy, Minister for Technical Education, in reply to representations made by local citizens.

It was also urged that courses in metallurgy and textile technology be introduced at the Tirupati Polytechnic as in the polytechnics of other two regions.

The Minister said it was not possible to do so immediately owing to lack of funds. Instructions would however be issued to reserve a certain percentage of seats in these polytechnics for the students of Tirupati region.

## Adult Education in France

THE French government has decided to give a second wind to adult education, first instituted in this country in 1971. This decision results from a dual ambition: to help the economy and promote the interests of workers.

From now on any worker, whatever his profession, qualification or nationality can apply for full-time or part-time professional training. He is paid according to his wage, his length of time in his company, his age and family situation.

The introduction of adult education in France has led to a wide variety of experiments, going from classical training to what is called collective promotion. This barbarous term covers an attempt to mobilize a group. This has been done in the north of France at Sallaumines, where nearly 2000 wage earners attend training courses organized by a local Education Authority. Spectacular results have been achieved thanks to the cooperation of local authorities and socio-cultural organizations.

## Teaching Electronic Technology

EQUIPMENT for teaching basic electronics technology in universities and polytechnics at all student levels—from technicians to post-graduate engineers—is to be introduced in India shortly by the export sales manager of a British firm. He is Mr. Brian C. Wells of Feedback Instruments Ltd., Crowborough, Sussex (Southern England), who will be in Bombay for a three-day visit in July.

## World Conference on Computers in Education

The Second World Conference "Computers in Education" organized by IFIP (International Federation for Information

Processing) will be held in Marseilles, France, from 1 to 5 September 1975 under the High Presidency of the Ministry of Education. The conference aims to bring together people concerned with the many possible roles of Informatics in Education. To show the progress made to date and in an attempt to gain new insight for the future, the following sessions will be held:

- Presentation of Papers selected by the Programme Committee out of 740 submitted papers.
- Round Table discussions on controversial topics.
- Panel discussions exploring the present state of the art and current trends.

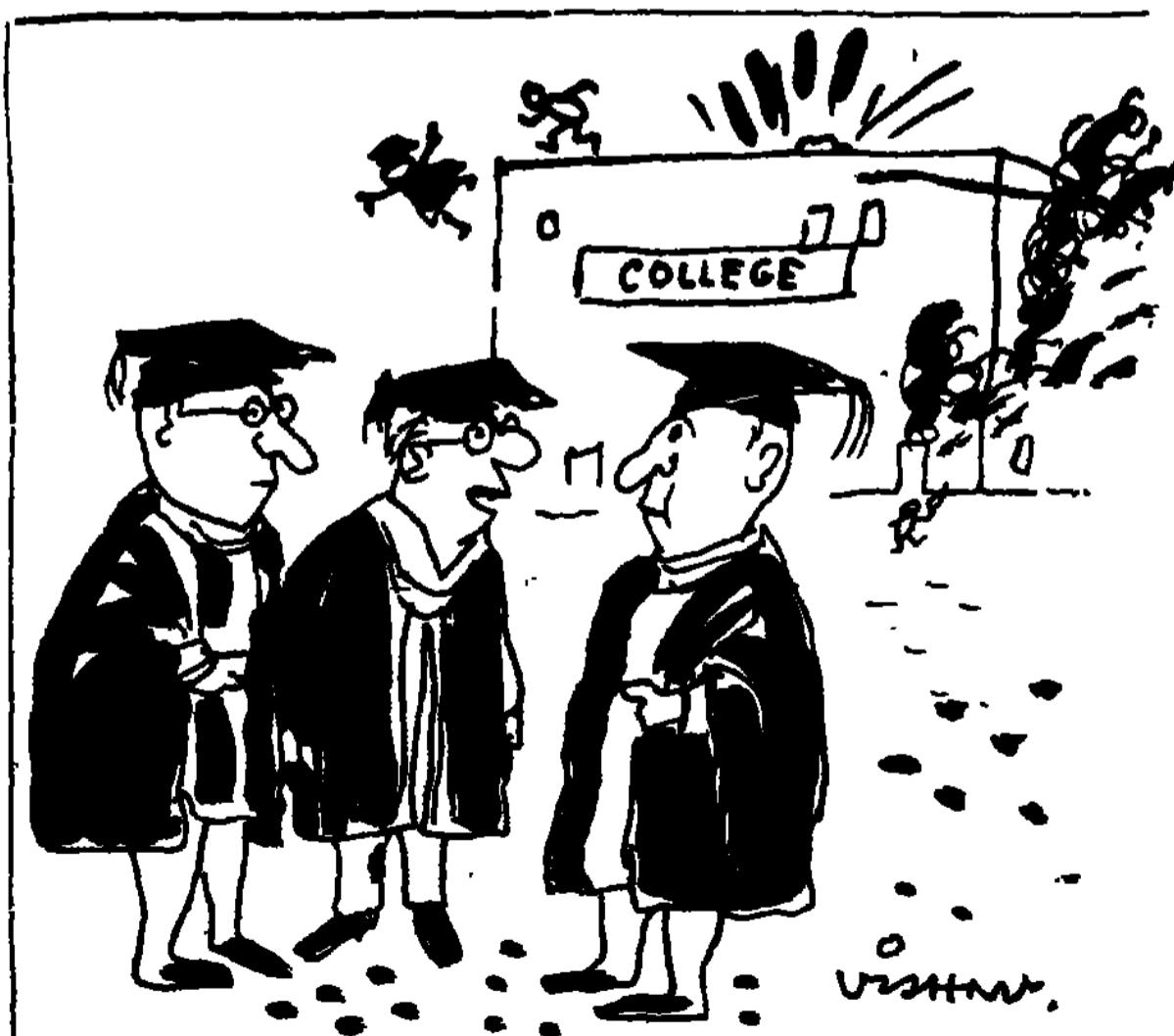
An exhibition of education-oriented hardware and software will be held during the Conference.

## New Research Projects

THE Indian Council of Agricultural Research has sanctioned an

operational research project for studying integrated control of cotton pests in Punjab at a cost of Rs. 12 lakhs. A similar project has also been sanctioned for Tamil Nadu.

In this project, all the known methods of pest control will be suitably blended and applied in a selected village so that the effectiveness of the integrated pest control programme can be assessed and people can be convinced of the same. It is also hoped to improve the tentative integrated pest control programme prepared on the basis of existing knowledge by carrying out additional investigations through staff and fund proficed in this project. The project has been thought of and prepared by Dr. O. S. Bindra of Punjab Agricultural University who is the Principal Investigator for entomology in the All-India Coordinated Improvement Project. He will also personally run the project in the Punjab while in Tamil Nadu it will be operated by Coimbatore station of IARI.



'There is a limit to the number of our graduates that the department of Explosives can absorb....'

# THESES OF THE MONTH

## A List of Doctoral Theses Accepted by Indian Universities

### PHYSICAL SCIENCES

#### Mathematics

1. Bhattacharyya, Paritosh. Some contributions to the researches on the theory of integrations. University of Kalyani.
- 2 Chikkodimath, S.B. Semi total graphs of a graph. Karnatak University.
3. De, Sourendra Nath. Some dynamical problems in elastic solids. University of Kalyani.
- 4 Mathur, Yogeshwar Dayal Information rates under geometric and double distortion measures. University of Delhi.
5. Sanyal, Dulal Ch. Some problems in the theory of elasticity and consolidation for porous materials University of Kalyani.
- 6 Shetiya, Vasudev Shridhar. Some studies in Univalent functions. Karnatak University.

#### Operations Research

1. Rani, R.G. A study of some waiting line models and storage systems. University of Delhi.

#### Astronomy

1. Chopra, Harjit Kaur. On the pulsation theory of variable stars. Punjabi University.
- 2 Poddar, Arun. Tidal force effects in clusters of galaxies. Osmania University.

#### Physics

- 1 Arjuna Rao, Bendapudi Mallik. Beta spectral shape studies in the decay of  $^{125}\text{Sb}$ ,  $^{115m}\text{Cd}$ ,  $^{110^m}\text{Ag}$  and  $^{42}\text{K}$ . Andhra University.
- 2 Gangwani, Gurcharan Singh. Thermal neutron transport processes in  $\text{H}_2\text{O}$ ,  $\text{D}_2\text{O}$  and  $\text{H}_2\text{O}-\text{D}_2\text{O}$  mixtures in the temperature range 268 to  $4^{\circ}\text{K}$ —the possible use of these moderators as cold neutron sources. University of Delhi.
3. George, P.C. Tunnelling in Esaki junctions. I.I.T Delhi.
4. Ha, Pillalamari. Level structure studies of negative parity states in the odd mass gold and iridium nuclei. Andhra University.
5. Kamala Mahajdeen Singh. Growth dielectric properties and domain structure of lithium niobate single crystals. Nagpur University.
6. Katpati, Ashok Gopal. Surface change years in ferroelectric potassium niobate single crystals. Nagpur University.
7. Krishnan, A. Studies in spark erosion of materials. University of Madras.
8. Mehta, Bhanwar Lal. Investigation on optical image evaluation. Punjabi University.
9. Mohan, S. Molecular spectroscopy: A fresh study of molecular constants. University of Madras.
10. Rajoria, Dalbir Singh.  $\text{Fe}^{+2}$ Mossbauer effect studies of spin state equilibria and localized-collective electron transition in rare earth cobaltates and of magnetic properties of  $\text{La}_{1-x}\text{ST}_x\text{ST}_x\text{CoO}_3$ . University of Delhi.
- 11 Ramanaiah, Kamisetti Venkata. Shop factor studies of beta transitions. Andhra University.
12. Rangacharyulu, Madabushi. NQR investigations in certain bromine and iodine compounds. Andhra University.
13. Somayaji, Tata Suryanarayana. A critical study of the spaced receiver method for ionospheric drifts. Andhra University.
14. Suryanarayananamurthy, B. Studies on small scale irregularities and traveling disturbances in the ionosphere. Andhra University.

15. Swaminathan, P. X-ray analysis of molecular structures. University of Madras.

16. Tekumalla, Achyuta Rau Matrix theory and applications to relativistic wave equations. University of Madras.

#### Chemistry

1. Adhikari, Sisir Kumar. Coordination compounds of beryllium—beryllium carboxylates. University of Kalyani.
2. Bhaskara Rao, Ghanta Bala. Some new aspects of the analytical chemistry of isonicotinic acid hydrozide. Andhra University.
3. Chakraborti, Sankarlal. Studies in glycolytic enzyme synthesis in *Escherichia coli*. University of Kalyani.
4. Datta, Salil Chandra. Biochemical and biological assessment of compounded poultry feeds—Development of some rapid methods for the evaluation of compounded poultry rations. University of Kalyani.
5. De, Rajib Lal. Co-ordination complexes of some transition metals. University of Kalyani.
6. Deshpande, Raghavendra Jeevanrao. A study of some reactions of dyes and dye intermediates using NMR spectroscopy. Karnatak University.
7. Dhake, Jagannath Dharma. The organic chemistry of nitrogen and sulphur compounds: New approaches to the synthesis of some (iso)thioammelimes and (iso) thioanilides and their thioethers. Nagpur University.
8. Ghosal, Durganarayan. Studies on sorption and desorption of organic cations on clays. University of Kalyani.
9. Hazra, Dilip Kr. Studies on the dissociation constants of ligands and their complexes in aqueous and mixed solvents and their spectral aspects. University of Kalyani.
10. Kava, R.M. Physico-chemical studies of membrane for application in reverse osmosis process. Saurashtra University.
11. Nirmal Kumari. Synthesis of substituted olefins by Ylids and Claisen Schmidt reactions. Kanpur University.
12. Padala, Satyanarayana Reddy. A study of the condensation of o-phenylenediamines with aldehydes and ketones and pyrolysis of the resulting products. Osmania University.
13. Pandya, Girish Humatlal. Ultrasonic velocity in electrolyte solutions with special reference to halogenated organic acids. Nagpur University.
14. Patil, Kesharsing Jaysing. Ultrasonic velocity in Liquids and aqueous nonelectrolyte binary mixtures. Nagpur University.
15. Pattnaik, Harish Chandra. Photolysis and radiolysis of hexacyanocobaltate (III) ion and some related species. University of Delhi.
16. Ram Sastry, Ramachandrula. Studies on the solvent extraction of vanadium IV complexes of acetylacetone and salicylaldehyde in the presence of some neutral nitrogen bases. Andhra University.
17. Roy, Lala Prabir Kumar. Chemical investigation of medicinal plants. University of Kalyani.
18. Saha, Amit Kumar. Chemistry of chromium in some less familiar oxidation states. University of Kalyani.
19. Tripathi, Shyam Sunder. Studies on iron-manganese relationship in soils. Kanpur University.

#### Earth Sciences

1. Agrawal, B.N.P. Some interpretational techniques for gravity measurements. Indian School of Mines, Dhanbad.
2. Ram Sastry, Cherla Venkata. Studies in drought climatology of the different climatic zones of North India. Andhra University.
3. Sarma, Allada Ahobala Lakshminarasimha. Drought climatology of the South Indian region. Andhra University.

## **Engineering & Technology**

1. Bandyopadhyay, Supriya. A study on pulverized coal combustion. University of Burdwan.
2. Gomkale, Sharad Dattatraya. Certain aspects of solar energy utilisation in India with special reference to solar distillation. Nagpur University.
3. Guruswami, R. Performance prediction of entrainment aerators using simulation techniques. University of Madras.
4. Sonolikar, Rama Laxmanrao. Effect of magnetic field on some chemical engineering operations. Nagpur University.
5. Sonune, Kashiram Kisan. Kinetics of dehydrogenation reaction in fixed bed. Nagpur University.
6. Subramanian, T.V. Studies in kinetics : Liquid phase oxidation of toluene. University of Madras.
7. Thiruvengadam, S. Surge and carrier propagation in multiconductor crossbonded cable systems. I.I.T., Delhi.

## **BIOLOGICAL SCIENCES**

### **Anthropology**

1. Gupta, Ghanshyam Das. A dermatoglyphic investigation on configurational complexes and terminal triradius on the fingertip area in relationship with the A.L.W. configurational complexes on fingerballs. University of Delhi

### **Botany**

1. Bhandran Nair, G. Studies in the anatomy and morphology of some dennstaedtioid ferns. University of Kalyani.
2. Das, Bimal Kumar. Studies on the relationship between mineral deficiency and metabolic processes in plant tissues. University of Kalyani.
3. Das, Jawaharlal. In search of the site of action of plant growth substances. University of Kalyani.
4. Dhara, Jyotna. Chromosomes studies, effect of mutagens and pigment analysis and gladiolus and fundamental cytological investigations on some other angiosperms. University of Kalyani.
5. Kavathekar, Ajit Kumar. Studies on origin, development and dormancy embryos of *Eschscholzia californica*. University of Delhi.
6. Nadkarni, Sunita V. Post-irradiation modification of oxygen-independent and dependent components of gamma ray induced damage in barley seeds. Jawaharlal Nehru University.
7. Raj, Satya Kinkar. Host-parasite interaction of seedling blight of jute caused by *Macrophomina phaseoli* (Moul) Ashby. University of Kalyani.
8. Ravindra Nath. Morphological, anatomical, cytomorphological and embryological studies in *Sesamum indicum* and *Martynia diaradra* (Glox.). Kanpur University.

### **Zoology**

1. Chakraborti, Samar. Effect of *staphylococcus aureus* on the dividing bone marrow cells of *Mus musculus*. University of Kalyani.
2. Chatteropadhyay, Arun Kumar. A study on some aspects of differentiations in vertebrates. University of Kalyani.
3. Dhakar, Narendra Kumar. Biological and systematic studies on Indian fresh water sponges. Indore University.
4. Ganpati, Nanaware Shivas. Biochemical and histochemical studies on the reproductive organs of some gastropods. Shivaji University.
5. Raina, Suresh Kumar. Studies on the neuroendocrine system in the earwig, *Labidura riparia* (Pallas). Nagpur University.
6. Ratnamala. Studies on helminths of amphibia. Osmania University.

### **Medical Sciences**

1. Chopde, Chandrabhan Tukaramji. Studies of adrenergic mechanism. Nagpur University.
2. Prasada Reddy, T.L. Studies on oxidative phosphorylation in mycobacteria. University of Delhi.

### **Agriculture**

1. Bhattacharyya, Suva. Genetic analysis of divergence in relation to resistance to helminthosporium in some varieties of *Triticum aestivum* (L.) University of Kalyani.

2. Biswas, Majibar Rahaman. Cytogenetical analysis on species hybrid in *Phaseolus*. University Kalyani.

3. De, Nrisingha Kumar. Effect of trace elements on growth and yield of soybean, ground nut and rice. University of Kalyani.

4. Gundu Rao, Desai. Studies of a seed-borne mosaic disease of french bean, *Phaseolus vulgaris* (L.). Mahatma Phule Krishi Vidyapeeth.

5. Gupta, Baban Ram. Microbiological investigations in salt affected soils. Kanpur University.

6. Haldar, Hemanta Kumar. Weed control studies in hybrid maize. University of Kalyani.

7. Khan, Sunil Kumar. Transformation of phosphorus in rice soils with reference to growth and nutrition of rice. University of Kalyani.

8. Kurmi, Sobbar Lal. Studies on breakdown of male sterility in tifton 23A and combining ability analysis of male-sterile lines in *Pennisetum typhoides* (Burm) Staff and Hubb. Kanpur University.

9. Maity, Saktipada. Evapotranspiration analysis on potato. University of Kalyani.

10. Maity, Sunirmal. Timing and rate of nitrogen application to the direct seeded wet land rice. University of Kalyani.

11. Mondal, Amalendu Bikash. Mutagenic sensitivity of the dormant embryos of rice. University of Kalyani.

12. Paria, Pranabesh. Aneuploid analysis in jute, *Crochorus olitorius* (L.). University of Kalyani.

13. Puranjan Das. Impact of economic factors on differential adoption of agriculture, health and family planning innovation : A study among the muslim in a rural region in West Bengal. University of Kalyani.

14. Roy, Sadhan Chandra. Sorption and desorption of phosphate in clays and clay minerals. University of Kalyani.

15. Sahu, Sakti Sanker. Studies on soil clay mineralogy in relation to their physico-chemical properties of some West Bengal soils. University of Kalyani.

16. Shiv Govind. Morphological and physio-chemical changes during growth and development of mosambi fruit, *Citrus sinensis* (Osbeck) with special reference to nitrogen. Kanpur University.

### **Veterinary Science**

1. Dhanwantar Singh. Physico-chemical characterization of Sheppox virus soluble antigens with particular reference to their role in immunity. Haryana Agricultural University.

2. Phool Singh. Studies on the utilisation of paddy straw with berseem urea, groundnut cake and molasses as a feed for ruminant. Kanpur University.

3. Saha, Genesh. Studies on the mechanism of nitrogen utilization in goat. University of Kalyani.

4. Yadav, Shivraj Singh. Pharmacological studies of certain autacoids in fowl. Haryana Agricultural University.

### **Home Science**

1. Nimkar, Asha Bapura. Food managerial problems and satisfactions of employed and unemployed middle class house makers in Nagpur city. Nagpur University.

## **SOCIAL SCIENCES**

### **Psychology**

1. Gupta, Suresh Chandra. A study of etiological factors in murders. Kanpur University.

2. Laxmi Kant Singh. An investigation into the generality of rigidity. Bhagalpur University.

3. Natarajan, P. A study of preparatory set through perceptual, motivational, and decision variables. University of Madras.

4. Seth, Madhu. A psychological study of learning process with special reference to audio-visual aid. Kanpur University.

### **Sociology**

1. Ratnayya, E.V. Tribal education in Adilabad structural constraints. Andhra University.

2. Shanti Devi. A study of changing attitudes of middle class Hindu women (18th to 25th years) towards caste, untouchability, marriage, family and sex. Kanpur University.

### **Political Science**

1. Dhanani, Gulshan. Crisis in West Asia and the policy of Johan Foster Dulles. Jawaharlal Nehru University.
2. Edmund, T. Martin Luther King, Dr. and the Black Americans' protest movement in the United States of America, 1955-68. Jawaharlal Nehru University.
3. Gubbanvar, S.Y. Political ideas of Hardekar Manjappa. Karnataka University.

### **Economics**

1. Barthakur, Inderjit Kaur. The problems of agricultural development in Arunachal Pradesh with special reference to Subansiri District. University of Gauhati.
2. Bhatia, Ramesh Kumar. A spatial programming model for India's petroleum and petrochemical industries. University of Delhi.
3. Jaura, Narinder Singh. The political economy of ecological destruction. Punjabi University

### **Commerce**

1. Jha, Satya Dev. Socio-economic study of Arunachal Pradesh. University of Gauhati.

### **Education**

1. Sharma, Krishan Dev. Equalization and utilization of educational opportunity with reference to the Muslim community in Delhi. Jamia Millia Islamia

## **HUMANITIES**

### **Philosophy**

1. Khanna, Sujata. The problem of suffering with special reference to Schopenhauer and Indian thought. University of Delhi.
2. Ponnusamy, Dharmawathy. Advaita approach to aesthetics. University of Madras.
3. Shrivastava, Nirupama. A comparative and critical study of the dualistic philosophies of Descartes and Samkhya. Kanpur University.

### **Literature**

#### **English**

1. Biswas, Anima. The art of Galsworthy . A study in his plays. University of Burdwan.
2. Ghosh, Rama. Vision and design in Hardy's fiction. University of Burdwan.

#### **Sanskrit**

1. Bhattacharyya, Kumar Nath. The concept of Iswara in Sankhya Yoga. University of Burdwan.

#### **Hindi**

1. Gautam, Bhagatsingh Thakurprasad. Prasdottar natak sabhya ke vikas ke paripekhsaya mein Pandit Laxminarayan Mishra ke vyaktitav even krititav ka anushilan. Nagpur University.

2. Jain, Pushpalata. Madhyakaleen Hindi Jain kavya mein rahasyabhabana. Nagpur University.

3. Nageswar Rao, Yelavarapu. The romantic school of poetry in Hindi and Telugu literatures. Osmania University.

4. Pande, Indra Datt. Chhayavadi kavya mein lok mangal kee sadhana. Kanpur University.

5. Sharma, Ramesh Chandra. Hindi sahitya per Mahatma Gandhi ke prabhav ka alochnatmak anushilan. Kanpur university.

6. Sharma, Vidya. Hindi ki rashtriya-sanskritik kavita mein ahimsa kee bhavana. University of Delhi.

7. Tiwari, Sarbdeo. Hindi Varnanukram kavya : Ek anushilan. Magadh University.

#### **Urdu**

1. Khatib, Mohd. Abdul Quader. Sharar : Life and work. Nagpur University.

#### **Marathi**

1. Bhavalkar, Asha Gajanan. M.R. Tambe . Ek chikitsak abhyas. Nagpur University.

#### **Arabic**

1. Syeda Meherunissa. A critical edition of 'Nuzhatul' Ayun by Ibnul Jawazi (510-597 A.H./1116-1200 A.D.) Osmania University.

#### **Tamil**

1. Manickam, T.S. Literary development in Tamil and Telugu during the period of Vijaya Nagar empire. Osmania University.

#### **Telugu**

1. Venkatarama Raju, K. Vijaya vilasamu seelanamu Andhra University

#### **Fine Arts**

1. Saksena, Saran Bihari Lal Ajanta kee chitrakala mein teri Kanpur University.

#### **History**

1. Chaturvedi, Sheela. Turk kakeen Bharat mein das pratha (1000 eesvi se 1400 eesvi tak) Kanpur University.

2. Gedam, T.V. Untouchability and its origin. Nagpur University.

3. Nigam, Sushma Rani. History of religious trends in U.P. from 647 A.D. to 1206 A.D. Kanpur University

4. Shrivastava, Mahabir Prasad. Lord Dufferin as the Viceroy of India, 1884-1888. Kanpur University.

5. Verma, Mahendra Kumar. Chandpur Dudhai kee Chandeli kala evam sanskriti. Kanpur University

#### **Geography**

1. Thakur, Shri Chand. Human perception and adjustment to flood hazard in the Ganga flood plains. University of Delhi.

# CURRENT DOCUMENTATION IN EDUCATION

A List of select articles culled from periodicals received in AIU Library during June 1975

## EDUCATIONAL PHILOSOPHY

- Ebied, R.Y. and Young, M.J.I. "Did the Arabs invent the university?" *Times Higher Education Supplement* (185); 2 May 70; 31.
- Miranda, Anselm. An ideology and programme for the National Service Scheme". *New Frontiers in Education* 5(2); May 75: 19-30.
- Shils, Edward. "Academic ethos under strain" *Minerva* 13(1); Spring 75: 1-37.
- Thody, Philip "Power houses where intellectual batteries are charged". *Times Higher Education Supplement* (184); 25 Apr 75: 4.
- Wells, John F "To defer never to the popular cry." *Chronicle of Higher Education* 10(1); 24 Feb 75: 20.

## EDUCATIONAL SOCIOLOGY

- Cobban, A.B. "Student revolutionaries, ancient and modern." *Times Higher Education Supplement* (180); 28 Mar 75: 13.
- Jawaharlal Nehru University. "Bread, butter and jam stir." *Economic and Political Weekly* 10(17); 26 Apr 75: 689-90.
- John, V.V. "Vice-chancellors' club." *University News* 13(5) May 75: 19-20.
- Martin, Bernice "Mining of the ivory tower". *Times Higher Education Supplement* (183); 18 Apr 75: 7.
- Sivakumar, Chitra Social behaviour of students: A women's college in Mysore city" *Economic and Political Weekly* 10(22); 31 Mar 75: 859-67
- "Students in socialist world." *Mainstream* 13(40); 7 June 75: 26-9, 34

## EDUCATIONAL PLANNING

- Al-Rawi, Musari "Educational policy for national development." *Prospects* 4(4); Winter 74: 461-9.
- "Asian programme of educational innovation for development (APEID): An Example of a regional strategy" *Prospects* 4(4); Winter 74: 535-40.
- Bhatawdekar, M.V. "Education and economic development." *New Frontiers in Education* 5(2); May 75: 31-8
- Bodart, Nicolas "Development- a constraint or a framework for education." *Prospects* 4(4); Winter 74: 489-93.
- Debeauvais, Michel "Popularity of the idea of innovation: A tentative interpretation of the texts." *Prospects* 4(4); Winter 74: 494-502
- Lourie, Sylvain. Education and society: The Problem of change." *Prospects* 4(4) Winter 74: 548-8
- Maurras-Bousquet, Martin. "An educational technique of great potential: Simulation games" *Prospects* 4(4); Winter 74: 555-63
- Niveau, Maurice, Frankel, Charles and Jochimsen, Herr Reimutt. "Servants or masters? How the civil servants rule British education—an O.E.C.D. examination of the D.E.S." *Times Higher Education Supplement* (186); 9 May 75: 8-11.

## EDUCATIONAL ADMINISTRATION

- Marshall, Roy, "Universities 'ready, able, willing to give good account of themselves'." *Times Higher Education Supplement* (184); 25 Apr 75: 13.
- Sommerfield, Richard and Nagely, Donna. "Seek and ye shall find: Organisation and conduct of a search committee." *Journal of Higher Education* 45(4); Apr 74: 239-52.
- Wilson, Robin Scott. "Are professors recyclable?" *Chronicle of Higher Education* 9 (10); 25 Nov 74: 24.

## CURRICULUM

- Becher, Tony. "Curriculum change in an age of consumerism." *Times Higher Education Supplement* (183); 18 Apr 75: 11.
- Bhambhani, C.P. "Political science in India: Academic colonialism and lessons for the third world." *Economic and Political Weekly* 10 (18); 3 May 75: 730-5.

- Sinha, R.K. "Teaching of economics: B.I.T.S. experiment." *University News* 13 (5); May 75: 10-12.

- Squires, Geoffrey. "Long way from the 'cafeteria' of free choice." *Times Higher Education Supplement* (180); 28 Mar 75: 9.

## EDUCATIONAL RESEARCH

- Klein, Helmut. "Educational and psychological research and decisions on educational policy." *Prospects* 4 (4); Winter 74: 453-60.

## TEACHING AND TEACHERS' TRAINING

- Main, A.N. "Training of university teachers: Development in Britain." *A.C.U. Bulletin of Current Documentation* (18); Apr 75: 2-4.
- "No one way to be an effective teacher." *A.C.U. Bulletin of Current Documentation* (18); Apr 75: 5-6.
- Pillai, N.P. "Colleges of education and trends in Indian education." *New Frontiers in Education* 5 (2); May 75: 1-12.

## EVALUATION

- Cohen, Stephen. "Unions guarded on teacher assessment." *Times Higher Education Supplement* (184); 25 Apr 75: 4.

- Fiedler, Fred E. and Gillo, Martin W. "Correlates of performance in community colleges." *Journal of Higher Education* 45 (9); Dec 74: 672-81.

- Harper, A. Edwin. "Translating marks into grades." *University News* 13 (5); 75: 8-9.

- "National merit examination: New U.P.S.C. scheme." *Yojana* 19 (7); 1 May 75: 29.
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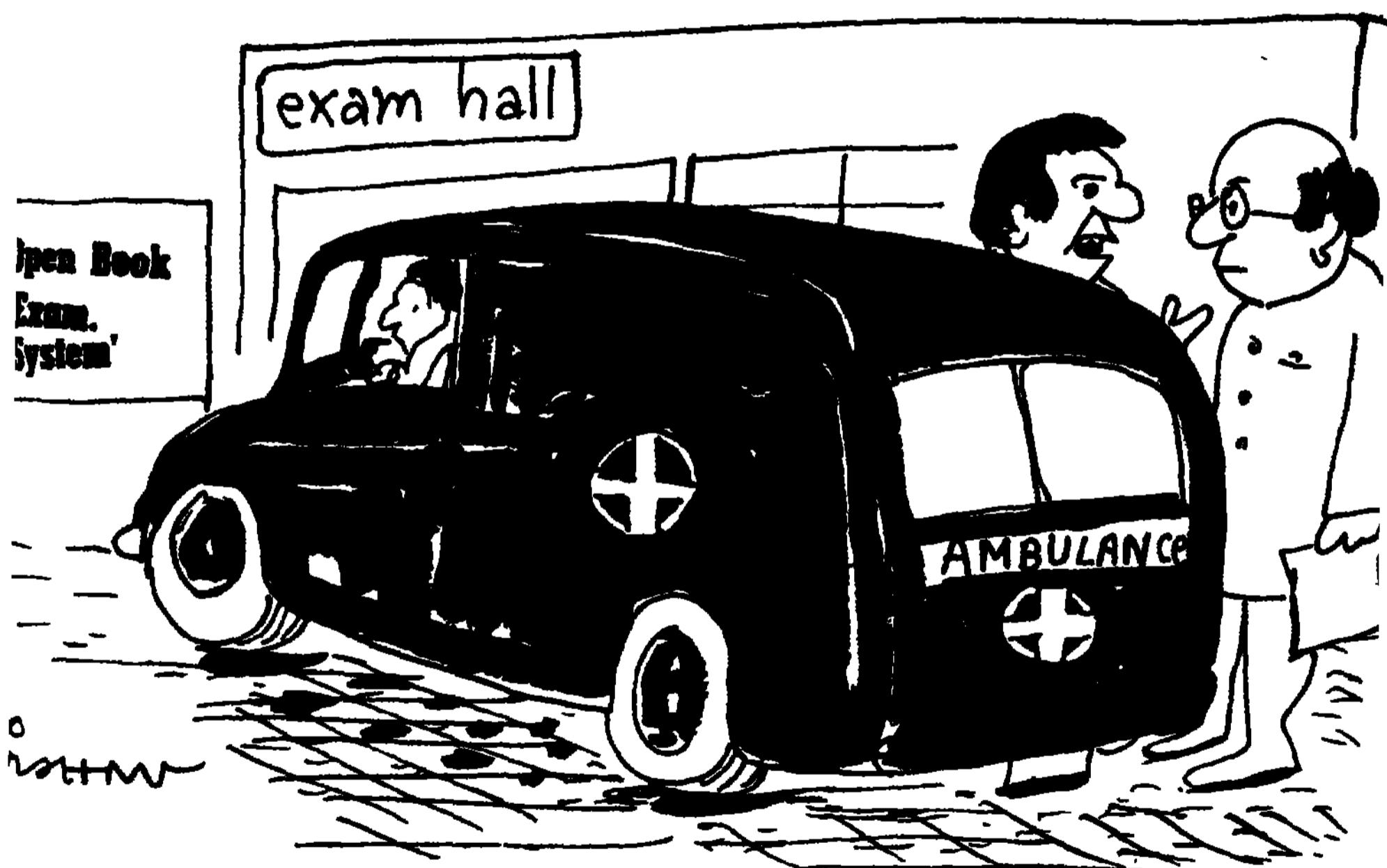
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**REGISTRAR**

# University News

- DECENTRALISATION OF LARGER UNIVERSITIES
- A.I.U. HISTORY

A CHRONICLE OF HIGHER EDUCATION & RESEARCH • AUGUST 1975 Re. 1.25



"The students stabbed the invigilator because he didn't show them where to open the book..."

## NOTIFICATION NO. 10/74

Applications are invited for the posts of Reader, Assistant Professor and Lecturer in the following departments of the

Scale of Pay: Rs. 1500-60-1800-100-  
2000-125/2-2500.

**Qualifications and Experience:**  
Master's degree/Doctorate in the appropriate field with not less than 10 years distinguished experience in teaching/research in an institution of University standard or Specialised knowledge in one or more specified fields. Professional work of outstanding merit and ability in guiding research desirable. In case of candidates of exceptional and outstanding ability, there will be flexibility in formal educational qualifica-

**Scale of Pay:** Rs. 1200-50-1300-60-1900.

**Qualifications and Experience:**  
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Scale of Pay: Rs. 700-40-1100-50-1600.

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**Fields of Specialisation:**  
(i) Chemical Engineering  
(ii) Biochemical Technology, (iii) Process Industries, (iv) Techno-logy, (v) Technology of Silicates  
(vi) Separations, (vi) Cellulose.

**Engineering:**  
(i) Civil Engineering including Structural, (ii) Hydraulic Engineering, (iii) Water Resources, (iv) Geotechnical Engineering including Geo-mechanics, (v) Airphoto Interpreting, (vi) Transportation Engineering, (vii) Construction Engi-

**Electrical Engineering:**  
(i) Power Systems, Protection and Control, (ii) Electrical Machines & Drives, (iii) Communication Engineering, (iv) Control Systems, (v) Network Analysis, (vi) Instrumentation, (vii) Applied Electronics, (viii) Electron Devices.

**Electronics Engineering:**  
(i) Power Engineering, (ii)

(iii) Microprocessor, (iv) Electronic Modelling, (v) Power Process Modelling, (vi) Micro-processor Electronics.

**6. Aeronautical Engineering:**  
(i) Aircraft Design, (ii) Aircraft Structures, (iii) Aircraft Systems.

### 7. Department of Chemistry

(i) Organic Chemistry—Natural Products and Synthesis, (ii) Inorganic Chemistry—Analytical and Co-ordination Chemistry, (iii) Physical Chemistry—X-ray Crystallography, Structural Chemistry, Thermodynamics and Electrochemistry, (iv) Polymer Chemistry.

### 8. Department of Humanities

(i) Philosophy (One vacancy of Professor and one vacancy of Lecturer only) (ii) Psychology (One post of Assistant Professor)

### 9. Department of Mathematics

(i) Fluid Mechanics (including Rheology, Tribology, and Heat Transfer) (ii) Magneto-hydrodynamics including Plasma Physics, (iii) Elasticity, (iv) Probability Statistics and Operations Research, (v) Complex Analysis, (vi) Modern Algebra, (vii) Numerical Analysis.

### 10. Department of Physics

(i) Atomic and Molecular Spectroscopy, (ii) Magnetic Resonance (ESR/NMR/FMR), (iii) Nuclear Physics—Experimental & Theoretical and Elementary Theoretical, (iv) X-ray Crystallography.

### 11. Computer Centre

(i) Computer Systems, (ii) Software Systems, (iii) Automata and Computational Linguistics, (iv) Advanced Computer Applications and Systems.

### 12. Geology

(i) Economic Geology (ii) Structural Petrology, (iii) Engineering Geology (iv) Ore Techniques (v) Geomorphology, (vi) Palaeontology.

Candidates should give an account of their academic and professional record, list of research publications, fields of specialisation etc. A candidate will be considered for any post commensurate with his qualifications, experience and contributions in the related field.

The posts are permanent and carry allowances such as D.A., C.C.A., H.R.A. as per rules of the Institute which at present correspond to those admissible to Central Government employees stationed at Bombay. The Institute has two Retirement Schemes viz. Contributory Provident Fund-cum-Gratuity, or General Provident Fund-cum-Pension-cum-Gratuity. Age of retirement is 60 years. Candidates called for interview will be paid 1½ Class Rail fare from the place of their residence to Bombay and back by the shortest route. Applications should be made on the prescribed form obtainable free of charge from the Registrar of the Institute by sending a registered airmail envelope addressed to:

THE REGISTRAR,  
UNIVERSITY OF KERALA,  
KALYANAMALA,  
TRIVANDRUM-691 006.  
Last date for receipt of applications  
is 14th August 1974.

UNIVERSITY OF KERALA,  
No: Ad. A.I. 37/74

### NOTIFICATION

Applications are invited from qualified candidates for appointment to the undermentioned posts in the University.

A. A. Department of Physics (Physics)	—One
(a) Professor	—One
(b) Reader	—One
(c) Technical Officer	—One
(d) Technical Assistant	—One
B. Department of Education	—One
(a) Reader in Science Education	—One
(b) Reader in Mathematics Education	—One
(c) Reader in Language Education	—One
(d) Reader in Education (General)	—One
(e) Lecturers	—Four
C. Department of Economics	—One
(a) Reader	—One
(b) Lecturer	—One
D. Department of Journalism	—One
(a) Reader	—One
E. Department of Aquatic Biology & Fisheries	—One
(a) Lecturer in Biological Statistics	—One
F. Department of Sanskrit	—One
(a) Lecturer	—One

Scale of Pay

Professor—Rs. 1200-1750  
Reader—Rs. 850-1250

Lecturer & Technical Officer—  
Rs. 600-1250

Technical Assistant—Rs. 493-835. Appointments to the post notified will be made strictly in accordance with Section 6 Sub-Section (ii) of Chapter II of the Kerala University Act of 1974, which enjoins that in making appointments by direct recruitment to the posts in any class or category in each Department under the University or to the posts of Non-teaching Staff in the University, the University shall make, mutatis mutandis, observe the provisions in Clause A, B and C of Rule 14 and Rules 15, 16 and 17 of the Kerala State Subordinate Rules of 1959, as amended from time to time.

The details of qualifications, experience etc. and application forms can be had from the Deputy Registrar (Administration), University of Kerala, on payment of Rs. 2/- by Crossed Post Box No. 1000, Trivandrum, for each post for which application forms are required.

The last date for receipt of applications for all the posts is 14th August 1974.

# UNIVERSITY NEWS

Vol. XIII                    AUGUST  
8                            ★                    1975

*A Monthly Chronicle of Higher Education*

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

*Editor : ANJNI KUMAR*

# Decentralisation ?

S. N. SEN

CALCUTTA University provides the classic illustration of a university with too much load on its shoulders—too many students, too many colleges and too many examinations. There are of course other problems which are no less serious—extremely inadequate financial resources and an over-centralised administrative machinery that has failed to deal effectively with the problems thrown out by extraordinary size and violent student disturbances. The UGC Committee on Calcutta University has sought to tackle these problems by (a) recommending a considerable reduction in its size, (b) decentralisation of authority at different stages and (c) the provision of large funds for the University from the Centre. The jurisdiction of the University is now to be confined only to the cities of Calcutta and Howrah. Even then the University will be left with about 90 to 95 colleges, which is again rather large for effective administration from one centre. The burden of supervision of the work of so many under-graduate colleges and their examinations is to be handed over to a number of Regional Councils under the University.

The Ghani Committee has suggested the formation of a number of autonomous Councils to look after the colleges placed under their charge, to hold the under-graduate examinations and to publish their results. These Councils will be of two types: three Councils to take charge of three professional subjects—Council for medical studies, Council for engineering and technological studies, and that for professional studies, such as Commerce etc. In addition, there will be three Regional Councils (five if we take account of Midnapore and Tripura)—one each for North, Central and South Calcutta. These Regional Councils will look after the general under-graduate colleges teaching the Arts (or humanities) and Science courses. Each of the three Regional Councils for Calcutta and Howrah will be in charge of about 30 to 35 colleges. They will consist of a Director, and a number of representatives to be elected by the Principals, Heads of Departments and the teachers of these colleges. Each Regional Council or the Subject Council will be of the nature of a mini-Syndicate (or mini-Executive Committee) in relation to the number of under-graduate colleges placed under their charge.

The Committee has made two other recommendations for the purpose of co-ordinating the activities of these Councils. There is to be the Council of Under-graduate Education (CUGE) which will

(Continued on Page II)

# Post-graduate Teachers in Varsities

## Appointments & Promotions

*N. Umakantha, Department of Physics, Karnatak University, the author, considers in this article the objective criteria for appointment & promotion of Post-graduate Teachers in Indian Universities*

1. *Introduction* : In most Indian universities the post-graduate teaching is separated from the under-graduate teaching and the post-graduate teachers are employed in three (or four) different scales of pay. As the post-graduate teachers are expected to do research and other academic work than mere teaching it is natural to expect some relation between the academic achievement (in its broad sense) of a teacher and his designation. But unfortunately in many cases there does not seem to be any relation between the two. We need not discuss the effect of this on the morale of the university teachers. Suffice it to say that so far little attempt has been made to evolve objective criteria for appointing and promoting post-graduate teachers. In this article we propose a set of objective criteria for that purpose which, if adopted, will lead to greater academic achievement on the part of the teachers, greater cooperation between them, and better utilization of the research equipment in the universities.

2. *The Problem of Assessment* : At first sight the total academic achievement of a teacher appears to be elusive of objective assessment. Let us consider a few typical problems. Which one is to be preferred out of the four candidates having the following qualifications ? (1) An M.Sc. with brilliant academic career, first in all examinations, with ten years of teaching experience but with no research background, (2) an ordinary M. Sc. with five years of research experience and ten research papers, (3) a Ph. D.

from an Indian university with five research papers, and (4) a Ph. D. from a foreign university with two research papers. For appointment in Indian universities should a Ph. D. from an Indian university be preferred over one from a foreign university or vice versa? Should we give equal importance to papers published in foreign journals, in Indian journals, and in Indian institutional journals? If not, how are we to assess them? So long as we seek qualitative answers to these problems much can be said on each side. It may even be amusing to see the same person put forth contradictory arguments in different selection committees if the different candidates whom he is interested in are having different qualifications.

Objectivity can be achieved if we avoid the present system of qualitative judgement of a few people by a few people for a few people. We should express each element of academic achievement (EAA) in terms of a number, or credits, and evaluate the teachers in terms of their total academic credits (TAC). For instance let us consider how to evaluate Ph. D. degrees and research papers. Evidently no individual or a group of individuals can go through all the thousands of Ph. D. theses and assign credits to them. We have to accept, at the first instance, that one Ph. D. thesis should get the same credit as any other. If the work is of good quality, it is likely to have lead to publication of research papers. Again we have to assign, at first instance, the same credit to every research paper. If a paper is of greater originality it is likely to have been cited more often by

other researchers in the field. Each such citation may be given some credit. If the work is of exceptional merit it is likely to be referred to in review articles and monographs on the subject. Greater credit may be given to each such reference. Thus the total credits an individual gets by virtue of his Ph. D. degree, the number of his research papers, and the number of citations of his research papers can be accepted as a good measure of the worth of his research work.

**3. The Credit System :** The different EAA that are to be taken into account and the credits to be assigned to them should be decided by the academic community as a whole and not by any individual or a group of individuals. This not only makes the system acceptable but also solves many problems. For instance, whether a foreign Ph. D. degree should be given more importance than an Indian Ph. D. degree or vice versa can be debated (rightly or wrongly) endlessly. If all the individuals who form the academic community are asked to assign credits to these those who feel that no distinction should be made will assign equal credits to both, while those who feel that the two should not be considered equal will give unequal credits depending on the opinions they hold. The average credits assigned to them represent their relative importance in the opinion of the Indian academic community. Similarly, the average credits given to different EAA represent the relative importance given to them by the Indian academic community. In Table I we give a list of EAA which, in our opinion, takes into account all reasonable shades of opinion. We can certainly add more to the list so that no item, which some wish to include, is omitted. This does not mean that the opinion of those few is forced on the others who do not think that the item deserves to be regarded as an element of academic achievements. For instance, a radio-talk may be considered by a few as worthy of inclusion while some others may not think so. This cannot be settled by a debate. If we include it in the list, those who feel that it is not worthy of consideration are at liberty to give it zero credit while those who consider it worthy of consideration may give it some credits; the average credit represents the opinion of the academic community.

To get a point of normalization, we may assign a credit of 1 for the teaching of post-graduate classes at the rate 1 hour per week for one academic year. If someone has taught post-graduate classes for three years at the rate of 5 hours per week, his teaching experience will get him 15 credits. Using this as a basis we can assign credits to other EAA. For instance, it normally takes 3-5 years to earn a Ph. D. degree which is of greater importance than mere teaching for the same period. So, we may assign more than 15-20 credits for a Ph. D. degree. Using such reasoning and depending on their sense of judgement, the teachers should be asked to assign credits to different EAA listed in Table I. The average credit given by the teachers to each EAA should be accepted as the standard credit.

As a safeguard against extreme opinions of a few having large effect on the average credit given to any EAA, we may reject all assignments that deviate from the mean by more than three standard deviations; individuals whose assignment are thus rejected may be asked to give their new assignments within three standard deviations and new mean value may be found. For instance, someone may give only 5 credits to a Ph. D. degree while someone else may give 500. Both are unreasonable estimates and should be avoided in finding the mean value.

**4. Total Academic Credits and Designation:** The total academic credit (TAC) of a teacher is simply the sum of the academic credits he has earned for all the EAA. Evidently, the TAC takes into account his degrees, teaching and research experience, research and other publications, and other activities. The TAC of an individual not only represents the evaluation of the individual by the academic community as a whole but, being a number, offers a quantitative and objective method of comparing individuals with diverse background.

There is some contention that it is far easier to publish papers in some subjects than in some other subjects. Whether this is so or not should first be found so that teachers of no particular subject are at a great advantage or disadvantage. This can be done as follows: First the TAC-values of all the teachers should be collected and their distributions should be obtained for each major subject such as physics, chemistry, etc. If the mean TAC-values (per teacher) in different subjects differ widely, a normalization factor should be associated with each subject so that the (normalised) mean TAC-value is the same for all the subjects. This is equivalent to accepting that on the average a teacher of one subject is as good as a teacher of any another subject.

Now some criteria can be laid down relating the designation and the TAC of a teacher. There are many ways of doing it. For instance, if C and D are the mean value and the standard deviation of the distribution of normalised TAC-values, all the teachers whose TACs lie between  $C-D$  and  $C+D$ , and more than  $C+D$  should be designated respectively as lecturers, readers and professors. Initially the basic salary should be directly related to the TAC of the teacher (for the reasons given below).

**5. Annual Increments and Promotions:** The annual increment should be based on the credits earned during that period. How much credit lecturers, readers and professors should earn annually or in a five-or ten-year period should not be decided by any group of individuals but should be based on what the teachers have been able to do (other than mere teaching) in the circumstances they have been placed all these years. This takes into account the existing research and other facilities. The TACs and the total years of service of all the post-graduate teachers in the Indian universities should

be collected and the distribution of average (normalised) credit per year earned by them should be obtained. In terms of this distribution criteria can be laid down relating the designation and the credit expected to be earned per year. For instance, if  $R$  and  $S$  are respectively the mean value and the standard deviation of this distribution, lecturers, readers and professors may be expected to earn  $R$ ,  $R+S$ , and  $R+2S$  credits per year, respectively. If a lecturer earns  $R$  or more credits he should get his annual increment. If he does not, his annual increment should be withheld; if in the next year he makes up his credits by earning  $2R$  credits or more, he should be entitled to his previous increment as well. This should be done, if necessary, over 3-, 4- and 5-year periods so that one who earns  $5R$  credits in a 5-year period does not lose any of his increments though he gets the increment amount a bit late. This procedure allows for the fact that research papers cannot be published in such regularity but at the same time exerts, in the form of withheld increments, sufficient psychological pressure on the teacher to work hard. If in a five-year period he does not make up his credits, he should get annual increments depending on the credits he has actually earned. If in a ten-year period he does not earn even  $5R$  credits, half of what is expected of him, his services should be terminated at the post-graduate department and transferred to an under-graduate department. Similar policy should be adopted in the case of readers and professors. If a reader does not earn  $5(R+S)$  credits in a ten-year period, his designation should change to lecturer without change of salary; similarly a professor who does not earn  $5(R+2S)$  credits in ten years should be made a reader without change of salary. If a lecturer earns more credits than is expected of him, he may not get additional increments. But he should become a reader as soon as his TAC exceeds  $C$ ; similarly a reader should become a professor as soon as his TAC exceeds  $C-D$ . This means that the total number of teachers in a department is decided by the teaching load, but the number of posts of different designations are not fixed: they are to be earned and retained by the teachers by hard work. The desirability of this method would be discussed later.

6. *Research Facility* : This system is meaningful only if the teachers have adequate facilities and the necessary freedom to earn credits. We need not discuss the difficulties many a teacher faces when he tries to do research in an Indian university. To alleviate these the following policy of financial assistance may be adopted. Each teacher should get per year research grants proportional to his salary (equal to six months' salary, say) which he can use for equipment, spares, chemicals, or any other item of his choice. Apart from this he should be entitled to an amount proportional to his salary (equal to six months' salary, say) in the collective grant made to the department. This collective grant is meant for obtaining major research equipment which a few teachers can use collectively. This system not only provides enough freedom for a teacher to get what

he alone needs for his research but also makes it possible for a few teachers to get the costly equipment they need. As the teachers need not belong to the same department, this will lead to inter-departmental cooperation first, and then to inter-disciplinary research. Having invested their shares of grants the teachers are bound to use the equipment efficiently to earn credits, and no costly equipment can be purchased unless there are sufficient number of teachers to make use of it. Since the credits earned by one teacher in no way affects the promotions of other teachers, the teachers stand to gain by cooperating with one another. If the faculty as a whole earns more credits they get more research grants which is beneficial to them collectively.

7. *Transfer of Equipment* : It is well known that considerable amount of research equipment remains unutilised in universities. We need not discuss the causes of this. Such equipment can be utilised if there is a rational policy of transferring equipment from one university to the other. No department would like to part with any equipment it happens to have (even though the equipment is not being used at the moment) unless such a transfer is advantageous to it. We may adopt the following policy. All the universities should be requested to declare the equipments that are not useful to them and also their cost at the time of purchase. Such an equipment should be valued at its cost price if it is less than 5 years old and in working condition, at 75% of its cost if it is more than 5 years old and in good condition, and at 50% of its cost otherwise. Any university interested in getting it should pay the value of the equipment to the university willing to part with it. Now the university has to choose between the possibility of getting equipment readily available in the country and the probability of getting similar new equipment at the present cost, facing the foreign exchange difficulties and the delay in obtaining it. The other university has to choose between losing the equipment they are not likely to use in near future and the opportunity of getting more money to purchase some other equipment they urgently need. This policy will certainly lead to transfer of equipment and their better utilization.

8. *Appointments* : In appointing new teachers we should necessarily take into account those aspects of merit which cannot be included in Table I but can be evaluated only through personal interview. So, all posts which become vacant as a result of the number of teachers becoming smaller than is necessary to bear the teaching load or which become available as a result of starting new disciplines, should be advertised. Only the candidates who have the minimum credits expected of the relevant designation should be called for interview. The selection committee (SC) should consist of members who have done research in the relevant field and themselves earned certain minimum credits set by the academic community. They should evaluate the following aspects of each candidate : his general knowledge, his understanding of his own special

subject, the standard of his publications, the importance of the recommendations from his old teachers and senior research guides or colleagues. These are given in Table II. If it is not to give scope for the art of winning friends and influencing people, the judgement of the SC should also be subject to the Credit System. The maximum credits the SC can give to a candidate for each item of Table II should be fixed by the academic community. In fixing these maximum credits, the academic community should remember that larger their values, greater is the scope for the correct assessment of the academic worth of a candidate by the SC but greater also is the scope for non-academic considerations. So, the community should know the role of these credits in comparison with the role of items in Table I. So, it is desirable that the data for Table II are collected after the data for Table I are collected, analysed and published.

A good research paper published long ago would have been cited quite often; this automatically takes care of the quality of the paper. But a recently published good paper may not be cited at all; it is necessary to give it due weightage. Whether an exceptionally good paper should be given twice, five times the credit we give to a paper in Table I is left to the academic community. It is important to remember that the credits given to candidates for items in Table II are used only to make a selection out of the many applicants; once appointed, a teacher's basic salary depends only on his TAC, because the teachers already employed have their salaries fixed by their TACs and do not appear before the SC.

It is also necessary that the academic community express itself about certain matters of policy. Whether a candidate who knows the regional language should be preferred or not is an important question. This has become relevant because many a university is thinking of introducing the regional language as the medium of instruction and has undertaken translating of books into the regional language. The question of giving preference to the regional candidate at the post-graduate department arises only if he has shown some competence in the art of translation. His willingness to undertake translation work as a part of his academic activity later can only be taken with a pinch of salt. However, the members of the academic community can express this by giving some credits to knowledge of the regional language if they so desire, and give credit to the lack of it, otherwise. National average may make this factor redundant, but the opinion should be sought.

Similarly, whether Ph.Ds of the same university should be given preference or not is also an important question. Those who prefer local Ph.Ds feel that: this leads to formation of a larger and wellknit research group in a particular field for which sufficient equipment has already been obtained, permits of research above the Ph.D. level and gives scope for more challenging work, gives opportunity for the young man to work in the familiar field and

earn sufficient credits to come up in life, etc. Those who prefer non-local Ph.Ds feel that: this leads to exchange of ideas and opening of new research fields, encourages youngmen to go out and do better work, prevents in-breeding etc. Evidently, much can be said on either side. Those who prefer local Ph.Ds may associate some credit for this and zero for non-local Ph.Ds; others may do the other way round. Again, the national average may make this factor redundant. But the opinion of the academic community should necessarily be sought so that the opinion of no group of individuals is forced on the community.

To avoid any member of the SC dominate over other members, each member should give credits to the relevant items of Table II to each candidate and the average should be taken. One who gets the highest total credit for the items in Tables I and II should be selected. Whether the interview should be held in-camera, in the presence of the members of the faculty, or in public, should be decided by the academic community. Similarly, the credit data of all the candidates, including the credits given by individual members of the SC should be made available to the faculty or even to the public, if so desired by the community.

9. *Safeguards* : In adopting this Credit System certain safeguards are necessary. In post-graduate department research should be regarded as the most important activity (other than teaching) and no teacher should be expected to earn all or major part of his credits by other means such as publication of articles in popular or semi-technical journals, translation of books, radio-talks, etc. So, credit earned through non-research activity should be included in calculating the TAC only if certain minimum credits are earned through non-activity. This minimum credit may be decided by the academic community.

It is possible that some teachers may manage to get their names included as authors of papers for which they have contributed little. This can be prevented if the credits an author gets for a many-authored paper is less than that for a single-authored paper. This is reasonable because if many have shared the work, they can as well share the credit. In universities most of the research work is done by a teacher and his Ph.D. student and some is done by two or three teachers. So, it is desirable that for a two-authored paper each should get full credit, otherwise it is the poor Ph.D. student who is likely to lose credits. One simple formula for sharing of credits is that each author of a paper within number of authors gets  $2/n$  times the credits assigned for a single-authored paper; other simple formulae are:  $1/n$ ,  $2/(n+1)$ ,  $2/(n+2)$ , etc. The academic community should select the formula.

A teacher may publish a large number of papers, specially short notes, in one particular Indian journal and claim credits. Invariably such notes are based

neither on his own experimental data nor on any theory of his own, and are of little values. This situation indicates a very special relationship between the author and the management of the journal. This is a rare possibility but can lead to demoralisation of one whole department. So, if a teacher earns more than twice expected of him in a five-year period, by publishing papers in a particular Indian journal, he should be requested to publish his papers in some other journal, preferably a foreign one.

**10. Concluding Remarks:** The procedure adopted at present in the Indian universities has many undesirable effects. The method of appointing teachers gives scope for unacademic considerations. The number of posts of each designation are fixed and a post is advertised when it falls vacant or is created. This leads to unhealthy competition between the teachers of the same department; often each thinks of improving his chances of promotion by preventing others from doing research and by resorting to undesirable means. More attractive the pay scales of university teachers become, greater would be the zeal of some teachers to get promotions by any means. The research grants are made to the department and not to individual teachers; this prevents non-influential teachers from getting the necessary research facilities. Much of the degeneration in Indian universities can be traced to these factors.

In contrast to this existing method, the Credit System is objective and every teacher knows where he stands. Appointments become mostly free from non-academic considerations. Every teacher has to remain active throughout his career even to get his annual increments. Research grants being made to individual teachers, every teacher gets research facilities commensurate with his competence. Promotions being automatic, earnestness is rewarded and no unhealthy competition exists between the teachers; on the contrary, they benefit by cooperating with one another. The research equipment would be used by many. Incompetent people who may get appointed will soon find it safe to get transferred to an under-graduate college. This leaves only research-minded teachers at the post-graduate departments. Since a professor does not get any monetary benefit by publishing more papers, we may expect him to concentrate on high quality research.

We have discussed the Credit System without the benefit of the data regarding what the university teachers have been able to achieve all these years, the type of equipment they have been using, the amount of time spent in teaching and other activities, etc. So, some of the figures we have mentioned should be taken as an indication of the way objectivity can be achieved rather than as final. We may conclude that the onus of suggesting ways and means of achieving academic excellence in Indian universities lies entirely with the university teachers. If there can be national workshops on methods of teaching, system of examination, etc., why not one on appointments, research grants, and promotions?

TABLE I

I Academic qualifications

A Bachelor's degree

- 1 III class
- 2 II class
- 3 I class
- 4 I rank

B Master's degree

- 1 III class
- 2 II class
- 3 I class
- 4 I rank

C Ph. D. degree from

- 1 Indian university
- 2 reputed foreign university
- 3 foreign university

II Teaching experience

- 1 UG classes, 1 hr. wk
- 2 PG classes, 1 hr./wk
- 3 other classes, 1 hr./wk.

III Research publications

A in India

- 1 Paper in a journal
- 2 short-note or letter in a journal
- 3 paper in a national symposium or conference
- 4 short-note in "
- 5 paper in an institutional journal
- 6 short-note in " "
- 7 paper in any other technical journal
- 8 short-note in " "

B in foreign

- 1, 2, ..., 8 as in III A

IV Other scholarly publications

A in Indian press

- 1 booklet
- 2 monograph
- 3 treatise
- 4 test-book for UG
- 5 text-book for PG
- 6 reference book for PG
- 7 review article
- 8 editorship of a book or journal
- 9 editorship of conference report
- 10 semi-technical article

B in foreign press

- 1 to 10 as in IV A

V Ability to guide research

- 1 producing a Ph. D.
- 1 completing a non-Ph. D. research project

## VI Translation work

- 1 a technical book
- 2 a technical article
- 3 editorship of a translated book
- 4 a popular book
- 5 a popular article

## VII Other non-technical activity

- 1 a popular article for public
- 2 a popular book for the public
- 3 a radio-talk

## VIII Recognition of research work

- A a citation in an Indian research journal
- 1 review article
- 2 monograph
- 3 text-book

### B a citation in a foreign

1, 2, 3, 4 as in VIII A

## III Local considerations

- 1 knowledge of local language vs. ignorance of local language
- 2 preference to local Ph.D. vs. preference to non-local Ph.D.

## IV Selection-policy

### A nature of interview

- 1 in-camera
- 2 in the presence of faculty
- 3 in public

### B credit data should be revealed to

- 1 candidates
- 2 faculty
- 3 public
- 4 syndicate only

### C credits given by individual SC members should be revealed to

1 to 4 as in IVB

## V Safeguards

### A minimum research credits

(to be earned per year)

- 1 lecturer
- 2 reader
- 3 professor

### B credits per author for a joint-paper of n authors (choose one)

- a  $1/n$
- b  $2/n$
- c  $2/(n-1)$
- d  $2/(n+2)$
- e any other

TABLE II

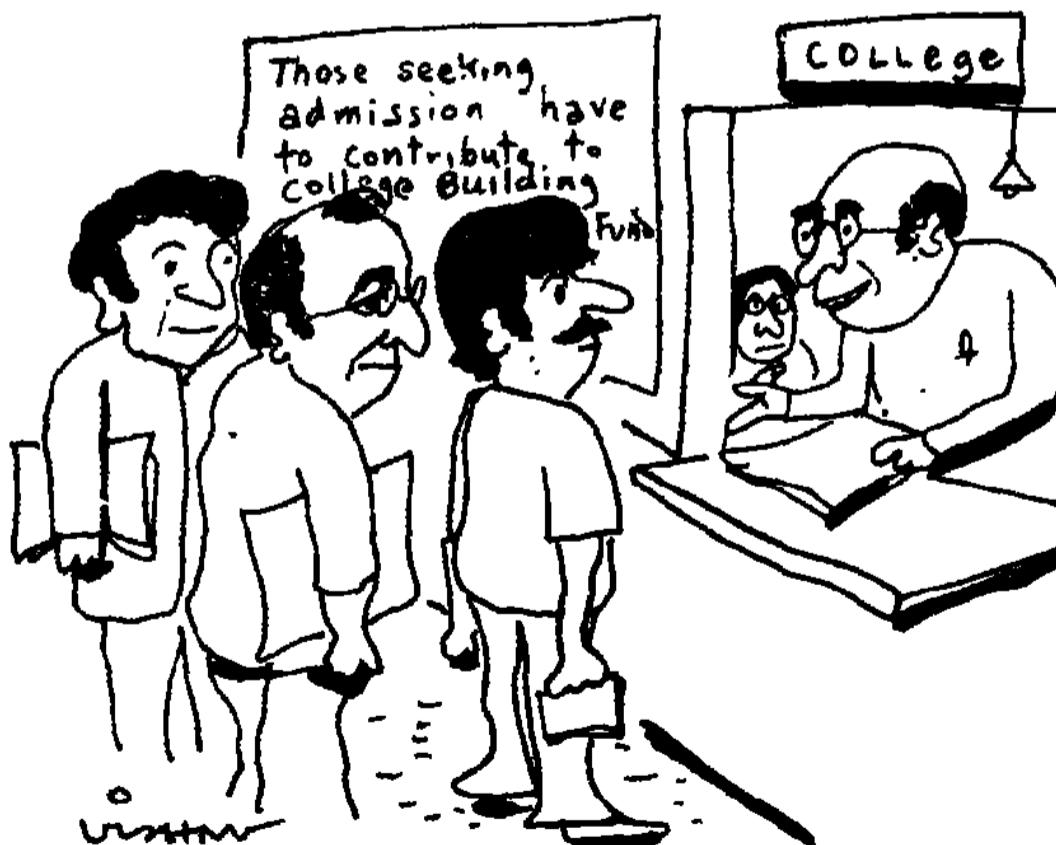
## I Selection committee

- 1 minimum no. of experts in a SC
- 2 minimum TAC to be a member of SC

## II Evaluation of a candidate

(the maximum credits for)

- 1 general knowledge
- 2 special knowledge
- 3 expression
- 4 standard of a research paper
  - a exceptionally good paper
  - b good paper
- 5 recommendations



"We were forced to raise it knowing that you'll burn  
the college after you join it....."

# A Mini Miracle

Chanchal Sarkar

OSMANIA University seems to have done the impossible—stamped out copying among its students. Stopping over in Hyderabad one night I tried to find out how. The first reaction came from teachers. They were delighted. Over the last four or five years, since the Telengana agitation had brought students out, they had been deeply humiliated by the amount of copying that went on and their own helplessness. Morale had sunk to zero.

From talks with the Vice-Chancellor, students and teachers, I could piece together the strategy and the steps. A combination of five things, I felt, brought about the collapse of mass copying : (1) Bolstering the confidence of teachers, (2) open diplomacy involving both students and teachers, (3) taking a firm line, (4) allowing the sane and good elements among the students to surface, and (5) some commonsensical concessions. Of course, none of this would have been possible without courage and determination of the Vice-Chancellor.

The first thing he did was to call a conference of the Principals and teachers. They were fed up to the teeth but had no lead, no support.

The teachers, Mr. Jagannmohan Reddy, the Vice-Chancellor, told me in a long conversation, agreed wholeheartedly to do their bit and it was decided that the impending post-graduate examination would be centralised in the Women's College where invigilation would be easier. From the student organisations, egged on by some teachers, there naturally, came the threat of boycott. Here Mr. Reddy took a firm line, along with open discussion. When the students wanted to see him he refused to meet a mob but welcomed a delegation. And he said, he would have an equal number of teachers. He also made it plain that while he would consult student opinion as much as possible there were certain areas where that opinion would not be sought. The teachers stood firm about centralising the examination and the reasonable section among the students, the sane element which is always the silent majority, emerged and agreed to take the examination. A quarrel then began among the so-called militants and sensibles.

Now came the time for concessions. A wider choice of questions was given—four questions to be answered out of 12 and, to refresh their memory, the students were given a summary of what had been taught. Examinees were searched after being given ten minutes to stack up the 'aid material' they were carrying. Result in the post-graduate examination involving 200 examinees and spread out over 20 days only 18 were caught copying. Sixteen of them were teacher-candidates ? The Vice-Chancellor, a former Supreme Court Judge, said he would temper justice with mercy.

Then came a much greater challenge—the under-graduate examination for about 17,000 students in 80 centres, 40 in the city of Hyderabad and 40 in the districts. In the past the students had gone in with knives and daggers. Invigilators had left the students to copy and gone out. Serious examinees were forced to hand over their papers so that others could copy from it. Examinations had become sordid affairs.

The strategy was modified to fit the task. Team of teacher-observers from the university were sent to all the centres, after being briefed. When the students protested about being searched, the V.C. reminded them that, even as a Supreme Court Judge he had not minded being searched before he boarded aircraft. When the demand came for postponing the examination, he went on the radio and laid down his proposals and appeal so that everyone could hear.

He knew that teaching had been very irregular and also that many students, depending on getting through by copying, had not prepared. The choice of questions was broadened, five to be answered out of 15. Those who were shaky were told they could drop this exam and take a supplementary one in November and the fee for the present examination would be valid for the next and that arrangements would be made to coach them.

Again this went well. Out of 16,800 or so students only 500 were nabbed. Mountains of material were recovered, Mr. Reddy told me, chuckling, from socks (despite the hot weather), from around the waist, from under rubber bands round arms and legs. But the examinations, the teacher observer operation, the invigilation, all went splendidly.

The parents ? They were over-joyed. Mothers began searching their children before sending them to the examination hall. Fathers have written to the Vice-Chancellor asking for his photograph. I should add that Mr. Reddy, a very energetic sixty-six, visited a large number of the centres. He signed himself in and out as an invigilator, he exhorted and encouraged the teachers and was always accessible to students. He wrote to collectors and DSPs to collaborate. In the end there emerged a mini-miracle, all because of sound and good sense and enthusiasm. Mr. Reddy now wants to turn his hand to examination reform and to ways of making the employment market more accessible to students. Oddly, the students were happy, too. "We'll now be getting a genuine degree," they told me, "what we took away so far was no degree."

Courtesy : Indian Express

decide matters of common interest and policies such as conduct of examinations, ensuring uniformity in standards and examinations etc. This Council will have a Secretary and a small staff, but will have no administrative responsibility, which will remain with the Regional or Subject Councils. It would be obligatory on the part of these autonomous Councils to carry out the policies laid down by the CUGE. Secondly, there is to be a common Board of Studies for each subject in which the teachers from all the Regional Councils will be represented.

Thus, according to the Ghani Committee, Under-graduate education, while remaining within the University, will be looked after by the under-graduate colleges themselves. Each Council will have jurisdiction over a comparatively small number of colleges (four or five in the case of medical colleges and about 30 to 35 for the general colleges) and it will not be difficult on its part to have a close liaison with the colleges. These proposals "offer an effective solution to the twin problems of unwieldy numbers and over-burdened administration that now afflict Calcutta University." While ensuring the benefits of the system of local self-government for the under-graduate colleges, subject to certain safeguards, it will enable the Vice-Chancellor and the Syndicate/Executive Committee of the University to devote themselves to the task of laying down the general policies regarding the administration and development of the University as a whole, including its Post-graduate Departments and research. Even with respect to the Post-graduate Departments, day-to-day administrative functions are to be handed over to the Deans and Heads of the Departments, leaving the authorities free to devote themselves to laying down general policies and planning and development. In this way, larger universities which are bound to stay in India, can secure many of the advantages of the comparatively smaller universities to be found in the Western countries.

The proposals have no doubt important merits. But two criticisms may be, and have been made of which the Report itself is fully conscious. One is that these will prove more expensive and complicated than the present arrangements. Each Regional Council is to have its own administrative staff and headquarters. There will be at least eight Controllers of Examinations, eight Inspectors of Colleges, to say nothing of other staff as there will be eight autonomous Councils with their buildings and other paraphernalia. The University at present runs the whole show with only one Controller of Examinations and one Inspector of Colleges (eight officers in the Controller's Department and three in the Inspector

of Colleges' Department). This is no doubt true. But present arrangement to run a university of huge size are extremely unsatisfactory, and the other alternative arrangement, such as the establishment of a number of smaller-sized universities, will be more expensive without any proof of better performance.

Another difficulty will arise because of administrative complications as the number of such Regional Councils rise. The task of securing some sort of uniformity or that of maintenance of adequate standards as between several Regional Councils may be an easy one, even if we provide, as the Ghani Committee has done, for the setting up of an Under-graduate Council of Education. Though we now swear by democracy, we must not disregard, except at the cost of efficiency, the truth of the saying, "too many men, too many minds." Here again, the question is one of relative degrees of administrative complications as between this set-up and that of the present large-sized universities. The difficulties on this account can be minimised if the number of Regional Councils, the number of colleges as well as the number of students under each university are kept down to reasonable figures.

Another variant of this system is the proposal to have one common Under-graduate Council of Education under the university, which will look after all the under-graduate colleges. This Council may set-up Regional offices instead of Regional Councils as in the Ghani Committee model, one such office for the medical courses, one for the engineering and technological courses, one for other professional courses, and three or four or more offices for the general science, humanities and social science courses. This set-up, it is claimed, will be less expensive while securing uniformity in courses, examinations and standards. But this system also suffers from the defects of over-centralisation. There will be no effective participation and involvement of the colleges in policy-making as they would have under the Regional Councils system. While it may serve to reduce the burden on the headquarters of the university it fails to secure the benefits of what may be termed local self-government. The Ghani Committee system implies the introduction of the federal principle in the organisation of the large university. Like all federations, it no doubt suffers from the twin defects of being more expensive and more complicated than the unitary systems. But it has the important advantage of ensuring a sense of participation on the part of a much large number of units in the problems of policy, planning and decision-making. It also serves to ensure that no authority is asked to do too much, while all are required to observe and maintain certain minimum academic standards.

# Book Review

**Association of Indian Universities  
1925-75**

*by S. S. Bhandarkar*

(pp. 227 price Rs. 50)

PROFESSOR Bhandarkar deserves congratulations on the occasion of the Golden Jubilee of the Inter University Board (now Association of Indian Universities).

With a foreword by the President of the Association, the book comprises nine chapters, twelve appendices, nine photographs and an index. The nine chapters are 1. Genesis and Early History, 2. Consolidation, 3. Organization, 4. University and the State, 5. The Battle of the Languages, 6. Some more Perennials, 7. IUB and UGC, 8. Achievements, 9. AIU and the Future. The book is not a mere chronicle of events. We have also the author's searching assessment of each development and his imaginative projection of what AIU should do in future. It is indeed a miracle that so much material could be compressed in such a small compass.

Prof. Bhandarkar has kept, throughout, an objective frame of mind. He has enumerated the significant achievements to the Board's credit, but has also mentioned its short comings and failures analysing the reasons for them.

From a modest start in 1925 as a small committee working in makeshift quarters, the IUB has today grown into a well-established, busy organisation. These eventful fifty years have been witness to World War II, transfer of power to independent India and many colonial countries in Asia and Africa, three high powered commissions — Radhakrishnan, Mudaliar and Kothari and the whole scene of higher education has been transformed. Instead of 14 universities of the traditional type in 1925, there

are now 116 university institutions. The IUB is faced by not only their increased number but also by their diversity. Along with the conventional type of universities established by legislatures and 'deemed' universities created by UGC, the 116 include 5 IITs and 22 Agricultural universities of the land grant pattern. Then again the nature of the conventional (traditional) universities also has changed. From Newman's conception of a university producing gentlemen-scholars, who could in his times fit into any public office, through Flexner's emphasis on its research aspect, down to the modern multiversity (of Clark Kerr) the facets of higher education have vastly increased in number. In addition to the inherited perennial questions, we are now faced with new problems of global character. As a consequence, Universities world over have had to adapt themselves to new needs. At least four areas of such adaptations spring to our mind. 1. student participation in university affairs, 2. instituting new degrees and courses such as for business management, catering, library science, documentation, etc. 3. applied research to deal with pollution, energy crisis, population control, social conflicts, etc. and 4. service of the local community through continuing education. For a dialogue with and service to universities of such dimensions, the IUB (be it said to its credit) has raised itself into a dynamic resource/research complex.

As initially with the Committee of Vice-Chancellors in the U.K. the IUB also in its early years faced the apathy of universities which functioned in isolation, jealously guarding their independence, each sufficient unto itself. But today when democratic forces are playing about, universities are perforce drawn

into the vortex of public life and they like to come together and to the IUB if only to face collectively the challenges of autonomy and finance. If again in 1925 IUB was the only body in existence, today we have a number of them such as UGC, All India Medical Council, All India Council of Technical Education, CAB —not to speak of the education ministries of States. It is interesting to notice that except the last two, the rest owed, in a way, their birth to IUB. For example it was IUB's proposal to government to have a central body of academies. The government's response was a Bill to institute a Central Council of Education whose composition was bureaucratic and functions so wide as to kill university autonomy. It is to the credit of IUB's efforts that the Bill was dropped. Now its initial idea, backed up later and refined by the University Commission, blossomed into the UGC. The present UGC with its amended constitution bears comparison with UK's University Grants Committee.

But there is a difference U.K. has a unitary form of Government India is federal: education is a state subject and the responsibility of coordination and maintenance of standards is shared by UGC and the Centre and also IUB. UGC has to deal with the Central Ministry of Education and also those in the States. Delays occur and not unoften frustration results. And yet, as pointed out by the author, the IUB has stood as a guardian of university autonomy. Its intervention, though unsuccessful when the Andhra University Amendment Bill was on the anvil is a second instance, the first being the Government's withdrawal of the Bill for Central Council of Education, mentioned earlier.

The IUB normally meets once a year but its standing committee

(now of nineteen) meets four times. This body, instituted in 1945, facilitates speedy conduct of business in the IUB's annual meetings, where a good number of 116 Vice-Chancellors attend. The IUB arranges from time to time workshops and seminars on live issues, to wit, the thorny problems of examination reform and language. The IUB has during its career adjusted itself to changing circumstances but with commendable caution. When IITs, Agricultural universities and 'deemed' universities came into existence, IUB did not rush into admitting them to its membership. It negotiated, made proposals and laid conditions before the step was taken.

The IUB has taken several innovative measures to increase its usefulness. One or two may be mentioned. It conducts a journal *University News* which has gained in prestige and popularity. It has established a Research Cell and brought out some publications, such as a Handbook of Indian Universities, a list of accepted thesis in Universities, and four volumes of *Research in Progress* in the four fields of physical, biological and social sciences and the Humanities.

In the last chapter, the author suggests, with considerable imagination, measures to improve and increase the scope of IUB's functions. In addition to its central office at Delhi and to assist it, there should be three regional offices in the Eastern, the Southern and the Western regions. In his view, a regional office can have easy, direct rapport with the universities in the region. These Offices can help and also co-ordinate the work of IUB's Board of Sports. The author's view in this regard merits fruitful discussion and serious consideration. Finance is the greatest hurdle; the second hurdle is the

anxiety that decentralization may not mean dilution and diffusion of coordinated action on the national level.

It is trite to say that neither the IUB nor even the UGC could (or should) impose solutions on universities which ought to remain largely autonomous and which have varying local conditions. Intractable problems can be acceptably and rationally resolved only through discussion, consultation and passage of time.

Prof. Bhandarkar may feel assured that his book will not rest on the library shelves but will pass from person to person and will be keenly read with interest and profit.

—G. S. MAHAJANI

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**Theory of Cataloguing,**  
by Girja Kumar and Krishan Kumar.  
Vikas Publishing House Private  
Limited, Delhi 1975.  
pp. ix—235 Rs. 25

CLASSIFICATION and cataloguing are the two pillars on which rests the edifice of a modern library. Whereas classification governs the arrangement of the documents on the shelves, cataloguing concerns itself with recording the accessions to a library, and making them accessible to readers by providing for all the possible approaches to the documents. It is one of the more prolific areas of library science. During the last two decades many important and far reaching developments like the acceptance of principles of cataloguing at the International Conference on Cataloguing Principles organized by IFLA in 1961, publication of the Anglo-American Cataloguing Rules (1967), the creation of machine readable data under the MARC project, newer techniques of developing subject headings and attempts towards international bibliographical standardization

have taken place in the subject of cataloguing. All these developments have been taken due note of and their implications thoroughly examined for the benefit of the students of cataloguing.

An important contribution that the present study makes lies in the comparative study of the two catalogue codes—Anglo-American Cataloguing Rules (1967) and Ranganathan's Classified Catalogue Code (1964) on the basis of the normative principles of cataloguing. Apart from pin-pointing the basic differences and similarities between the two, an effort has also been made, in this book, to discover the synthesis between these two catalogue codes. Another important feature which deserves mention relates to the study of Indic names. The genesis and characteristics of the personal names from all the regions of the country have been given in detail. Though a word of caution, so very necessary, regarding the pitfalls in the rendering of personal names is provided at places, e.g. "There are certain words which can occur either as a complementary word or a family name (e.g. Kumar, Lal, Singh etc.). At times this may cause confusion" (page 152), the equally important guidelines to avoid the pitfalls are sadly missing. Topics like chain procedure, centralised and cooperative cataloguing, and limited cataloguing have been discussed in detail. Cataloguing of non-book material has somehow escaped the attention of the authors. It is hoped, it will be taken care of in the next edition.

The book, written in a simple and direct style, is primarily meant to meet the requirements of students studying for Diploma in Library Science and Bachelor of Library Science Courses. To help them gain a grasp of the subject, the book is spangled throughout with a number of

tables making a comparative study in various topics, like the physical forms of the catalogue, types of catalogues etc. Select lists of relevant documents are given at the end of each chapter for further reading to help students supplement their knowledge and enhance their understanding of the subject.

About the future, the authors are rightly enthusiastic about shared cataloguing programme of the Library of Congress. They are equally aware of the impact that the computer and machine readable bibliographic description are likely to make on the shape of things to come. But there is also a word of hope for the present librarian that "card form of catalogue will retain its place for a long time to come".

—SUTINDER SINGH

#### GANDHI FOR YOUTH

by Sugata Dasgupta,  
Vishwa Yuval Kendra, New Delhi,  
1974,  
pp. 55, Rs. 2.50.

THE youth are a very important and vital constituent of society. They are full of energy and idealism. They look for guidance and direction. The misdirected youth will be destructive elements in the society. The youth need 'models' to follow and to sustain their morals and values. This was available in plenty during the freedom struggle. But the country's political leadership for years guided by Gandhiji and inspired by a long time of venerated leaders now feel free to include their petty ambitions and often a thwarted greed. The emphasis has shifted from idealism 'to selfishness' with each one for himself. This has considerably disillusioned most of the present day youth.

The home, long considered to be a place of comfort and security

for the child, has failed to serve its purpose. The home and the family are fast disappearing from the scene. Schools and colleges have failed to teach their pupils high moral standards, cultural aspirations, integrity and affection. In such a milieu the youth seem to have lost both hope and courage. The isolated youth revolt. These are mere acts of spontaneous and sporadic outburst of a few organised or disgruntled groups. These are failed together snow-ball effect to turn the activities into a youth movement.

The present volume consisting of a series of lectures delivered at the Vishwa Kendra aim to kindle new hope and courage amongst the youth by acquainting them with the thoughts and methodology suggested by Gandhiji to change the society. In the words of the author the three lectures put together provide an elementary primer for the purpose and bring in one place three important materials. These include a methodology for the study of Gandhi, some of the salient features of new society as desired from his socio-economic thoughts and the methods which may be used for expedition of change (Page 3).

The author has classified into three 'schools' the studies on Gandhi or Gandhism made by three distinct groups. In the first school falls the biographers, the second is concerned with the proper editing of his writings, and the third lays primary emphasis on empirical study and specially of weaker section of the society.

The basic guide lines given for work is to adopt non-violent method based on a battery of principles. The non-violent movement is a 'people-oriented' movement. A non-violent revolutionary has to base all his action on the consent and support of the people. It aims to help all the people, including the 'enemy', that is, the other party. The

movement proceeds through unarmed militant action and pledges to root out the evil from the society and makes compromises, wherever necessary. The compromise, however, is not about the cause that the movement upholds but with the persons of "the other party". A non-violent struggle should not even when the full victory is achieved, lead to any personal gain for the revolutionary. It should bring material benefit only to the weaker sections. Thus the basic principles to be followed by the revolutionary should be not of self-glory and self-esteem but of self-denial. His ultimate goal should remain "unto the last".

One wonders as to how many of the youth will give-up their comforts and privileges and follow the non-violent method to help the exploited. The stakes and challenges are many. The youth will have to rise to the occasion and not to remain docile rabbits. They should pick up the courage to shape the destiny of the nation. The message of Gandhiji to youth is much more relevant and apt even today as has been very ably demonstrated by the author in his lucid exposition of the material.

The book is refreshingly short and the presentation is a balanced one. It is an admirable and readable book. Its merit lies in the fact that it is interesting and intelligible throughout. It is packed with information, which, however, is always related ably to theoretical questions. Unfortunately, there is not much rigour applied in the formulation of the three schools by the author. The comparison of these schools is also hollow. What direction will the youth movement take? Much depends on how determined today's young are to come to grips with the age-old problem of how to live in a human society.

—K. D. Gangrade

# **CONVOCATION**

## **Little done about exam Reforms**

—Jatti

THE Vice-President of India, Shri B.D. Jatti delivering the 4th Convocation Address of Himachal Pradesh University at Simla said:

The system of higher education in our country which has been built up over the last 120 years or so is now the subject of frequent and bitter controversies. Some are of the opinion that it is basically a good system which needs to be reformed and strengthened. There are others who take a dark view of the situation and recommend a running away from it or even its total dismantling. Such sharp differences in the evaluation of the system arise because it is now playing a variety of roles as a result of historical, social, economic, political and cultural factors. Some of these roles are noble and good; others are of doubtful utility; and some are even harmful. It would not, therefore, be desirable to regard the entire system as one homogeneous and monolithic entity and then to label it as good or bad. It would be more correct and helpful to distinguish between its positive and negative roles and treat them separately. This will probably give us a better understanding of the situation and a more practical insight in devising programmes of reform.

Perhaps the most important and useful role which the University system plays at present is to preserve and disseminate knowledge and to acquire new knowledge through research in huma-

nities, social sciences, natural sciences and technology. As a consequence of this programme, the university system is also supplying the high-level trained manpower needed for all the different walks of life. Let us not forget that it is the university system which has provided the leadership required for our parliamentary democracy which is of such enormous size and complexity. The development of our modern industrial sector would not have been possible but for the personnel trained by the university. It is this high-level trained manpower which is also responsible for our achievements in the green revolution, for the nuclear explosion which we recently carried out with success or for the satellite we have been able to place in orbit a little while ago. Our total stock of high-level scientific trained manpower is now the third largest in the world; and because of it, we are also in a position to help other developing countries to improve their agriculture, to modernise their industries, and to build up their social services. This is an achievement of which the university system has every right to be proud and for which the nation should feel grateful.

Another important and helpful role of the university system is to promote vertical mobility for the ~~superior~~ social groups. Univer-

and an inequitable society in which the upper and the middle classes which are well-to-do can afford to send their children to institutions of higher education and then place them in important leadership positions in society. The poor people however, are at a great disadvantage. Many of them cannot send their children to schools at all; others do send them but are compelled, on account of poverty, to withdraw them, sooner rather than later. Very few of them complete even the elementary school and still fewer, the secondary school. Under these circumstances, there is no doubt that the poor and weaker sections of the society will not be able to receive higher education and move upwards in society unless the State comes forward in a big way to help them. This is what is being done at present under the programme of post-matriculation scholarships for scheduled castes and scheduled tribes, followed by a reservation of posts in public services. This is one of the finest examples of promoting vertical mobility in the deprived social groups. Such help is also being given, to a considerable extent, to other economically handicapped groups as well. Even the worst critics of higher education are, therefore, agreed that the university system is the most important channel of vertical mobility for the poor people.

Examination reform has been talked of for years, he said. The Radhakrishnan Commission went so far as to say that if this one reform (examination system) could be carried out, the entire system of higher education would be transformed. No one has claimed that this reform is very costly and that the funds required for it were not available. Nor

(Continued on Page 21)

## UGC Awards for Scientific Work

DR. R. R. Daniel, Senior Professor of Physics at the Tata Institute of Fundamental Research, is one of the three Indian scientists named by the University Grants Commission for awards for 1974 for outstanding scientific work. Prof. Daniel, 52, will be receiving the Sir C. V. Raman award for experimental-research in physical sciences "for his contribution to the studies of cosmic rays, particularly high energy cosmic ray electron and the inferences made on some properties of the galaxy."

The other two awards, named after Dr Homi Bhabha (for research in applied sciences) and Prof. Meghnad Saha (for research in theoretical sciences) have gone to Prof. T. R. Anantharaman, Head of the Department of Metallurgical Engineering, Banaras Hindu University, Varanasi, and Prof S. K. Joshi, Head of the Department of Physics, University of Roorkee respectively.

The awards, each of the value of Rs. 10,000, were instituted by the University Grants Commission with the help of Hari Om Ashram Trust, Nadiad (Gujarat). They will be given during 1975 for the first time.

## Campus unrest : Concern in Sri Lanka

WHEN the Peradeniya Campus of the University of Sri Lanka reopened after a month's vacation, no one suspected that the new session would have such a stormy start. What followed were two weeks of "nightmarish" student ragging culminating in a fresher girl jumping from the third floor of the women's hostel on May 31 "to escape further brutalities." The fall did not prove fatal but the girl was hospitalised with a broken spine. Thirteen other students were also admitted to the hospital while scores of newcomers received treatment at the University Medical Centre for injuries, physical strain and exhaustion.

## Round Up

# Reverse Transfer of Technology

THE massive outflow of highly qualified scientists, engineers, technologists and medical doctors from developing countries to developed countries over the last about two decades is well known. The beneficiaries of this brain drain are mainly United States, Canada, U.K. and Western Europe, and the donors are the countries of Asia, Africa and Latin America. The migration of technically qualified personnel results in a significant loss of precious human capital to the donor countries while it increases the technological capability of the advanced countries. A substantial part of the technological

assets of the developing countries pass on to developed countries each year and the process can be appropriately termed as Reverse Transfer of Technology.

While the magnitude and causes of brain drain have been studied in detail, its economic effects have been posing serious problems of quantification. A recent study by UNCTAD which examines some of the economic aspects of the "Reverse Transfer" and evaluates the costs and benefits involved therein provides an interesting insight into the phenomenon.

TABLE

*Inflow of Scientists, Engineers and Physicians into the United States from the developing countries: 1961-70.*

Year	Scientists & Engineers	Physicians & Surgeons	Total
1961	1175	635	1810
1962	1378	1007	2385
1963	2305	1042	3347
1964	2088	1176	3264
1965	1575	1052	2627
1966	3010	1465	4475
1967	6253	1993	8246
1968	5901	2041	7942
1969	6361	1923	8284
1970	9025	2211	11236
<i>Total</i>	<i>39071</i>	<i>14545</i>	<i>53616</i>

A report on the incidents by Campus President Professor George Kodituwakku was not accepted by the island's Education Minister Dr. Badi-ud-din Mahmud who appointed a high-level team to investigate the affairs. Professor Kodituwakku was later replaced by Dr. P. W. Vithanage, professor of geology, as the new campus president. One of the recommendations that the team made was to close down the Peradeniya Campus for an indefinite period but the Government did not favour such a step maintaining that the students who wanted to study should not be denied the facility to do so. Consequently, two police posts were set up on the campus to provide protection to such students.

The communist-dominated Sri Lanka National Union of Students (SLNUS) which controls the Peradeniya Student Council reacted adversely to police presence and declared that if the police were not withdrawn immediately, the students would go home. Accordingly, in the next five days, the campus became almost empty when 3,300 of the 3,700 resident student population abandoned the school. The 400 who chose to stay behind were the final year medicine, engineering

and agriculture students. The police force, in the meantime, was reduced to less than half of its earlier strength.

The situation which has developed now points to an impending showdown between the university authorities and the students. The President of the Peradeniya Campus, Prof. Vithanage directed all the students who had left the campus to return forthwith or they would be denied permission to sit for their examination. At the same time, President of the Peradeniya Student Council G. G. P. Abeysekera instructed them to stay away from the school until they received a letter from him saying that the students' demands were met and that they could return to the campus. The demands include the removal of the police from the campus, the abrogation of "suppressive" regulations being enforced in the school and the launching of an enquiry to "unearth the conspiracy" behind the recent ragging. Another dimension was added to the state of affairs by the decision of the Inter-University Students' Federation which comprises the student council presidents of all campuses, to boycott classes as a protest against the way things were being handled by the authorities.

The Director of Extension Education at the University who gave away the certificates said that there was an urgent need to tackle problems of handling, marketing and storage of vegetables because these are highly perishable commodities.

### Computers & Social change

The Computer Society of India would be holding its annual convention at Hyderabad from January 20-23, 1976. 'Computers and Social Change' would be the theme of discussions. Persons interested in sending the necessary papers may please contact the Programme Chairman of the Society early.

### Sports Medicine Award

The Sports Medicine Fellowship Award Committee headed by Prof. B. K. Anand, Assistant Director, Health Services, W.H.O., New Delhi has recommended the award of four fellowships during 1975-76 for various projects in the field of Sports Medicine. The fellowship will be of the value of Rs. 350/- p.m.

1. Dr. Murari Lal Gupta,  
Department of Orthopaedics,  
M. K. C. G. Medical College,  
Berhampur.

"Effect of knee joint movements  
on the heart rate, blood pressure  
and respiration in athletes and  
non-athletes."

2. Dr Amija Kanti Majumdar,  
Department of Biochemistry  
Institute of Postgraduate  
Medical Education and  
Research, Calcutta.

"To compare the excretion of  
5 HIAA during a one hour period  
of the rest and exercise. To  
compare the excretion of Uric  
acid in the same period.

3. Miss Chand,  
Department of Anthropology,  
Delhi University, Delhi.

"Estimation of total and segmen-  
tal body volume with certain  
anthropometric measurements on  
sportsmen in India."

4. Dr. Subhas Chandra Chug,  
Dept. of Orthopaedics,  
Govt. Medical College,  
Patiala.

"Changes in minisci of knee-  
joints with age with relevancy  
to middle age athletes"

## All-India Adult Education Conference

The 28th All-India Adult Education Conference would be held this year from October 25-27, at Jabalpur. Shri P. N. Haksar, Deputy Chairman, Planning Commission will be delivering the keynote address. The theme of the Conference is 'Non-formal Education : A Remedy and a Restorer'. Representatives from universities and voluntary organisations concerned with adult education; representatives of the Ministries of Education, Agriculture, Labour and Community Development and State departments of Education and Panchayats are expected to attend. The Samaj Shikshan Samiti Jabalpur,

is hosting the conference and will make the necessary arrangements for the stay of the delegates.

### Summer Institute Concludes

A one-month summer institute on vegetable crops sponsored by the Indian Council of Agricultural Research at the Punjab Agricultural University ended recently. At this workshop, 24 vegetable scientists from 13 States of India discussed latest vegetable breeding methods and their application to the development of new varieties of vegetables.

# Science Research Council set up

THE University Grants Commission has constituted a science research council and panels in different science subjects to promote university-level research in sciences.

The newly-created bodies will advise the commission on how to facilitate science research in universities and recommend projects.

Conceding that its support for research in scientific fields and applied sciences has "not been adequate", the commission intends to overcome its previous failure by providing "adequate support for university research" during the fifth Plan.

Towards this end, the commission has sanctioned 129 research projects in science.

The approved projects include study of ecology and productivity of some typical wetlands in Kashmir, development of breathing organs and oxygen utilisation of some air breathing fishes in India, molecular biology of host virus relationship, and relationship of dietary protein to lipid metabolism. The studies will be undertaken by teachers of various universities.

The commission will provide both indirect and direct support to the projects. Indirect support will be in the form of development grants under Plan programmes. The grants will be mainly supplementary to facilities already available in institutions, not to meet the entire needs for building up a project.

Direct support involves grants to research projects, financial assistance to individual teachers, research fellowships and associateships, and science awards.

The projects could be of basic or applied nature related to the national research and development effort or in newer fields and interdisciplinary areas of importance, the sources say.

The research schemes will be funded initially for three years, extendable to another two years. In special cases, retired teachers who are teaching or conducting research in an honorary capacity will be considered, provided they are not on any pay roll.

The commission's assistance to teachers will be up to Rs. 10,000 but may be enhanced for publication of monographs or research papers.

and other receivers, antennae and converters in 2,400 selected villages in Karnataka, Bihar, Orissa, Madhya Pradesh, Andhra Pradesh and Rajasthan to receive programmes of entertainment and education directly or indirectly from the satellite.

The experiment has been made possible by the assistance of the United Nations Development Programme (UNDP) and the International Telecommunication Union (ITU) and the co-operation of the United States which has positioned its ATS-6 satellite towards India for a year. The programme being prepared by the radio and television authorities covers national integration, modern agricultural techniques, family planning, health and environmental awareness. In all, there will be four hours' broadcast daily through the satellite 90 minutes in the morning and 150 minutes in the evening.

## SITE TV as a Teacher

INDIAN space and television experts will conduct an experiment with satellite-television that may well revolutionise mass education techniques.

Should the experiment prove successful as anticipated, India will give a lead to the rest of the developing countries to use satellite-television as a teacher to steadily liquidate illiteracy and poverty.

For the first time, the Satellite Instructional Television Experiment (SITE) will demonstrate that relatively inexpensive receivers can be used to bring television programmes oriented towards development to remote villages in different parts of the country.

The Indian Space Research Organisation (ISRO) has placed 2,400 special television community

## Pantnagar to get UGC grades

THE Pantnagar Agriculture University has decided to implement new University Grants Commission pay-scales with retrospective effect from Jan 1, 1973. The decision would mean substantially thicker pay-packets for the teaching staff.

A university release said the revised scales for senior lecturers, lecturers and assistant lecturers would be Rs. 1,500—2,500, Rs. 1,200—1,900 and Rs. 700—1,600, respectively.

The university will incur an extra expenditure of over Rs. 22 lakhs this year in implementing the new pay scales.

# UK help for overseas Students

BRITAIN has one of the world's highest proportions of overseas students at her places of learning. About one in every 10 students at Britain's educational establishments comes from overseas, and only France and Germany have comparable percentages. Only two British students study overseas for every five overseas students welcomed to Britain.

But there was a sound case for taking in foreign students, said Mr. John Grant, Parliamentary secretary at the Ministry of Overseas Development (ODM), in outlining these facts at a conference of the United Kingdom Council for Overseas Students Affairs in London recently said: "The concept of a university or polytechnic is that its windows are open on the world. If it is to flourish, it must aim to be universal, there is, I believe, a real

interest for British places of learning to welcome students from overseas in order to enlarge their own experience. We must not become a little Britain or a little Europe."

The Ministry of Overseas Development, as part of its technical assistance to developing countries, gave help with subsistence and fees to 12,000 to 14,000 students who attended many centres of learning in Britain. Most took part in normal courses alongside British students from other parts of the world.

But the ODM was also concerned with special courses of particular value to students from developing countries. Examples were courses in civil engineering, public administration and economic development.

out more than 30,000 graduates for the first time in the country's history. Junior college graduates also touched a record figure of nearly 131,000. It was mentioned in the report that three out of every four colleges and university graduates had found employment. A similar proportion of the junior college graduates had also secured work. The report further said that only one out of every 20 graduates registered for further studies.

## Exam system in Indian Varsities

AN examination reform plan prepared by the University Grants Commission (UGC) has gone into operation in 12 universities. The main focus of the plan is on internal assessment of students, preparation of a question bank and grading. The concept of internal assessment in contrast to the current examinations was considered to be of vital importance. The UGC was of the view that judging the performance of students entirely on the basis of the end-of-course tests reflected only their power of expression and their capacity to recall information. Internal assessment, on the other hand, provided the universities a complete procedure to test the students' other skills like the application of knowledge and their sense of analysis and synthesis. The UGC plan also suggested several safeguards to prevent any misuse, overestimation or undergrading of students. For this purpose, it was necessary to expose both teachers and students to the philosophy behind the new concept of assessment.

The creation of question banks in the new scheme was planned to eliminate some of the defects in the present system of setting examination papers. Ordinarily, the examining body only prescribed a syllabus for each subject and recommended some text books to go with it. The new scheme emphasised that a student must

## Starting salary up in Japan

ACCORDING to a survey by Japan's Labour Administration Research Institute, the average starting monthly salary for male university graduates this year was nearly 90,000 yen (approximately 295 yen equal one US dollar). This showed an increase of more than 8 per cent over last year's wage pattern. A male high school graduate now earned 73,000 yen compared to about 70,000 yen in 1974. Lower on the scale, workers fresh from junior high schools received 63,000 yen improving their remuneration by 7 per cent. In all, the first pay packets of the newly employed, including females, averaged a little over 8 per cent increase. The study pointed out that this was the lowest rate of increase since 1968

when the institute began similar surveys.

The wage study covered 265 major commercial houses in Tokyo. It was mentioned in the findings of the survey that one out of every four firms surveyed had "frozen" the initial salaries on the grounds of prevailing slump in business. Conspicuous in this category of concerns were 15 of the 16 textile firms included in the study and 26 of the 27 companies dealing in electrical machinery. The "best three" employers in terms of starting pay were broadcasting (108,000 yen), publishing (99,000 yen) and steel industry (98,000 yen). The "worst three" were found to be metalworking, services and construction concerns, none of which offered more than 85,000 yen.

An Education Ministry's report said that in 1974, the Japanese universities and colleges turned

be provided with a large number of questions on different subjects to give him an idea of what was expected of him in the examination.

The grade system would replace the present marking procedure. Several studies showed that the present method was subject to large-scale errors and idiosyncrasies of the examiners. The proposed plan of grading ensured a certain degree of uniformity based on a seven-point scale recommended by the University Grants Commission.

## "Learning to be"

TO produce their 1972 report—later called "Learning to Be", translated into 28 languages and having a stimulating effect on education throughout the world—the seven members of the International Commission on the Development of Education drew on their own expertise and a mass of documentation supplied by names to conjure with in the educational world—Ilich, Piaget, Myrdal and Freire, to name only a few.

Excerpts from these 81 contributions have now been published. Together they make up a picture of, as the title puts it "Education on the Move". Some of the apparently universally valid reasons why it is on the move and also some of the reasons why it has not yet moved as far as some would wish.

Despite the immense variations between industrialised and developing countries, between socialist and capitalist economies, between those who see education in crisis and those who regard it as an orderly and controllable development, striking similarities arise which show why the International Commission was able to produce a single report.

For example, what has happened to education in China,

little documented today and in 1972 almost an unknown area, presents parallels with reforms proposed or carried out in countries which at first sight have little in common with China after the Cultural Revolution. The foremost aim of the Revolution, writes Leon Vandermeersch, was to re-establish firmly the dictatorship of the proletariat; the educational reform was to overthrow the power of the intellectuals.

The duration of studies was universally shortened to two phases of schooling, one unified period of primary and secondary studies and one of higher education, the two separated by a period of participation in active life. The rising cohorts of students, more quickly released into active life could give greater impetus to a developing society than a small minority could do. Moreover, their level of attainment is not fixed for permanent diplomas have been abolished and age limits for study are on the way out

## Majority anxious to get jobs only

A STUDY undertaken in U.K. by the Manchester University Central Services Unit for Careers and Appointments Services, revealed that majority of university and polytechnic graduates were averse to going in for post-graduate research. On the contrary, they were anxious to get hold of jobs without any further loss of time. The study also pointed out that the graduates preferred public service career for its security when compared to high-salaried positions in the industry. In this context, one out of every four university students went into a government job in 1974 compared with one out of five in 1970. In the case of polytechnic students, 28 per cent took up public service jobs in contrast with 20 per cent a year ago. Most of the polytechnic graduates joined local govern-

ment and health services. It is also of interest to note that in polytechnics the number of students entering engineering and allied industries courses has gone down by almost 20 per cent. There has also been a drop in the admissions to the building, civil engineering and commerce areas.

## IDRC Seminar on processing

DR. (MRS.) P. PUSHPAMMA, Professor of Foods and Nutrition and Principal, College of Home Science, Andhra Pradesh Agricultural University (APAU) participated in the International Development Research Centre (IDRC) Seminar on processing and Utilization on Grain Legumes held at Manila, recently

She is the first Home Economist to participate in IDRC Project Workshop. As Dr. Pushpamma is interested in developing rural nutritional status and submitted a project to IDRC, it is likely that IDRC may approve Rs. 15 lakhs research project for APAU.

## Work meet for Field Study Project

A SEMINAR on 'The Work Meet for Field Study Projects—College and Community Work' was organised at Ahmedabad on 12th and 13th July, 1975 for the benefit of teachers-in-charge of NSS programmes of colleges affiliated to the universities of Gujarat. The UGC assisted the Gujarat University for organising this seminar. About 40 delegates from the various institutions of Gujarat attended the seminar.

The seminar was inaugurated by Shri Navalbhai Shah, the State Education Minister of Gujarat. Shri I. J. Patel, Vice-Chancellor, Gujarat University and President of the Association of Indian Universities, presided. At the seminar experiences of

various institutions in adopting villages for rural development were exchanged and discussed. Shri Babubhai Patel of Nav Gujarat College, Shri N. G. Parikh of L D. Arts College and Shri S. S. Ravat of St. Xaviers College narrated their experience of adopting villages for community work. The representatives from the agricultural university and Ayurvedic universities also highlighted the work done for agricultural and ayurvedic extension

Principal Yashwant Shukla, chaired one of the sessions. He made a strong plea to the students to intensify their interest in the NSS activities as it provided a useful area for doing social work. He said that NSS should form a part of the academic programme in the universities and colleges. A visit to a local village was also arranged. The delegates saw the good work done by the students of Nav Gujarat College. They were also given an opportunity of meeting and discussing the problems of the villagers. At the plenary session the following recommendations were made and adopted.

1. Colleges having the NSS units be encouraged to adopt villages in their area for undertaking intensive development work
2. For this purpose a list of suitable villages may be compiled for adoption by the colleges by the State Development Commissioner in consultation with the State Departments of Agriculture, Community Development and Village Development. The list be circulated to colleges and universities for their information and action.
3. The Government be requested to provide adequate funds for the execution of these projects.
4. Adequate transport facilities be made available to the staff and students working in NSS units.
5. At the state headquarter a NSS cell may also be organised

and all the grants be routed and coordinated through this cell. Frequent Inter-university seminars of Coordinators and Persons-in-charge of NSS camps in the State may be organised.

6. The universities may be permitted to make special grants to the colleges for the execution of the various development projects. The State and Central Governments should also be requested to provide necessary grants for these developmental activities.

(Contd. from page 15)

has any one challenged the view that this reform is entirely within the autonomy of the university system to implement. And yet I find that so little has been done in this matter. In fact things have becomes much worse. We are not even able to hold examinations as scheduled ; and there are cases where an examination has been postponed for as long as two years. Malpractices in examinations have become common and are practised openly on a mass scale in certain areas. The deterioration of values and the wrong orientations which our young men & women get through such failures of the system is not education. It is a serious mis-education which will do incalculable damage to the society in the long run. It would therefore be wrong to describe the whole system as bad and to condemn it outright. It would be equally wrong to describe the whole system as basically sound and to continue to tolerate its weaknesses or failures. We must really adopt a more discriminating policy. Good programmes and good institutions have to be identified, encouraged and strengthened. Weak institutions, failures and lapses will have to be seriously dealt with and programmes of radical reforms planned for them. It is only a discriminating and comprehensive policy of this type that will help us to improve our system of higher education.

He emphasised the need to mobilise strong public opinion in favour of the reforms needed. Since higher education is closely linked with all life, its reform will involve cooperative and concerted action on the part of a large number of agencies, the Government of India, the State Governments, the University Grants Commission, the Universities and Colleges, the teachers, the students and the general public. The role of the general public in this programme is often under-rated. The public, particularly the vocal upper and middle class public ; is keenly interested in problems of higher education because the future of their children is intimately related to the health of the university system. Unless the strong support of this public is fully secured through active campaigns reforms of higher education are not likely to succeed. He, appealed to all concerned to help in educating public opinion on the urgency and the content of the reforms needed in higher education. Particularly the press should do a good deal more than what it does at present.

He appealed to the university and college teachers and he said that the largest part of university reform depends upon them. If they can improve curricula, adopt dynamic teaching methods; reform examinations and build good relationships with the students, more than half the problems would be solved. That it is not beyond their capacity to do these things. Moreover this now becomes a moral obligation also. When teachers do good service through education, society feels grateful and strives to improve their status. Similarly, when society goes out of the way to improve the status of teachers, it becomes their duty to strive hard for educational reform.

## **Building Plans of Calcutta Varsity**

THE University of Calcutta would soon be embarking upon their second biggest building programme costing about one crore of rupees. A five storeyed building for the university computer centre has been planned to be constructed at the Science College Campus. A building for the Education Department would also be constructed at a cost of Rs. 12 lakhs.

The History complex will house the Ancient Indian History and Archaeology Department and also the departments of Ancient Indian History, Archaeology, Museology Islamic History and Culture and Modern History. Similarly, two more additional floors would be added to the present Science College Building to house the expanding Department of Agriculture. The Indian Council of Agricultural Research and the Government of West Bengal are likely to assist the university for this purpose.

Additional accommodation would also be provided for the university press where it is proposed to locate a confidential section of the Controller's department. The Applied Chemistry Department and the Department of Applied Psychology have already been provided additional accommodation in the College of Science Building.

This would be the second effort of the university to provide extra accommodation after independence. The university was given a grant of Rs. 1 crore during 1957 when it celebrated its centenary.

## **Education Reforms Board for Punjab**

PUNJAB Government has constituted a 31-member committee for education reforms in the State. The committee has 4 student members. Its ex-officio members include Secretary for Finance and Planning, Secretary for Industries, Secretary for Education, Chairman of Punjab School Education Board. The Committee is headed by the Education Minister, Mr. Gurmail Singh. The Director of Public Instructions is its Member-Secretary. The Vice-Chancellors of the four universities, viz., Patiala, Amritsar, Chandigarh and Ludhiana are also its members.

The committee is expected to submit its report within six months. It will examine all reports of UGC, NCERT, Central Board of Secondary Education and of the various commissions and committees head by Dr. Radhakrishnan, Dr. D S. Kothari, Shri P.B. Gajendragadkar as well as the Shukla Committee report on 10+2+3 pattern of education. It will also examine the existing academic structure in the State and make practical recommendations keeping the functional significance of education as well as the economic needs of the State in mind. It will report on all the three aspects of education viz. general, medical & technical.

The committee will examine in detail the question whether the traditional system was really outmoded and if so suggest ways and means to modernise it to meet today's needs. The State Government has already taken some steps for the vocationalisation of education. The committee will examine it further and suggest reforms in this field as well as

in higher education. The four students on the committee are Mr. Udey Pratap Singh (Punjabi University), Mr. Jasbir Singh (Panjab University), Mr Surinder Singh Sandhu (Guru Nanak) and Preet Inder Kaur (Agricultural University).

Dr M.S. Grewal, Director of Research and Medical Education Punjab, Mr. J.S. Gill, Director of Technical Education, Punjab, Prof. Rais Ahmed, Director, NCERT, Mr. R.K. Chhabra, Secretary, UGC, Mr. Nayyar, Adviser on Education, Planning Commission, Principal B.S. Bahi of Jullundur and Principal Gursewak Singh of Patiala are the other members.

## **Innovation at Agra Varsity**

FROM this academic session Agra University would be introducing a new system of examination. Four internal tests would be conducted by colleges for their students. At the end of the session, the university would conduct a general examination. On the basis of the results the students would be placed in one of the five grades on the basis of their overall performance during the year. The grades would replace the marks awarded hitherto. This reform is based on the recommendations of the general workshop conducted by it on examination reforms as recommended by the University Grants Commission.

## **Revised rules for teachers appointment**

THE University of Delhi has accepted the recommendations of a committee set up on the selection and appointment of teachers in its colleges. The university has now sent a model letter of appointment to colleges which incorporates a clause saying that lecturer's increment if he is without a doctorate at the time of appointment will be stopped if he or she does not get the doctorate within 5 years.

The new rules also require colleges to include in the minutes of the selection committee meetings details of the number of candidates called for interview, those actually interviewed and those selected in order of preference. In cases of relaxation the selection committee is required to give reasons. The university has also suggested that for each vacancy about 15 candidates should be called for interview.

## **Report on Visva-Bharati**

A COMMITTEE appointed under the chairmanship of Mr. Justice S.A. Masud, last year on the future of Visva-Bharati has presented the report to Prof. Nurul Hasan, Union Education Minister. After proper consideration the decision would be taken to determine the lines on which the Visva-Bharati has to be developed and a Bill amending the Act would be introduced accordingly.

## **New Course sat Cochon University**

ELECTRONICS and Communication Systems, Applied Chemistry, Mathematics and Statistics, Applied Economics and Physical Oceanography/Meteorology are some of the new courses to be started by the University of Cochon.

Dr. N.K. Pennikar, the newly appointed Vice-Chancellor of the university reported that the full-time MBA course, Naval Architecture and Ship Building courses and B.Tech in Rubber Processing Technology are very popular with the students. He said that the university was established in 1971 for the development of higher education in Kerala with particular emphasis on postgraduate studies and research in applied science, technology and industry and commerce. With the allocation of grants by the State Government and the UGC, the

departments of Marine Science, Management Studies, Law, Physics and Hindi which were taken over from Kerala University have been further developed and strengthened.

The Vice-Chancellor has plans to develop the university now into a full-fledged educational centre. 72 hectare of land has been acquired for the Thrikkakkara campus and is being developed. Hostel accommodation is also planned to meet the urgent needs of students. The health centre has already been completed. The Vice-Chancellor said that in the course of time his endeavour would be to provide the necessary institutional facilities for the development of industries like Rubber, Ship Building, Timber, paper, chemicals, fertilisers which have special significance for Kerala.

## **Kurukshtra regulates B.Ed. admissions**

FOR some time large scale corruption had prevailed in the private colleges of Kurukshetra University in admitting students for B. Ed. courses. Cases have been reported where admission forms were given to candidates hailing from other States especially Delhi on large payments. This has led the Kurukshetra University to appoint its nominees on the admission Board to ensure fair selection of the teachers trainee on merit. The university has also asked the postgraduate colleges in the State not to admit candidates who are not bonafide residents of Haryana.

## **Personal**

1. Dr. M. S. Adiseshiah has taken over as Vice-Chancellor of University of Madras.
2. Shri Narayan senh has taken over as Vice-Chancellor of Awadhesh Pratap Singh University.
3. Shri Harsukhbhai S. Sanghvi has been appointed Vice-Chancellor of Saurashtra University.
4. Dr. P. Dayal has been appointed Vice-Chancellor of Magadh University.

# INDIAN SCHOOL OF MINES

D H A N B A D—826004

Admission to the Research Programme (Session 1975-76) in Engineering, Technology and Science.

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Nineteen Scholarships are currently available--15 for candidates with qualifications at (1) above and four for those with qualifications at (2). The duration of Award would be three years for candidates with qualifications at (1) above and two years for those at (2) above.

*Department of Mining Centre of Study in Mine System Design* 1. Monitoring of environment in mined-out areas. 2. Study of breakage and failure of rocks in relation to mine design. 3. Improvement in efficiency of low-head stowing.

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*Department of Applied Geology* 9. Investigation of sulphide mineralization in southern parts of Sikkim. 10. Study of the Sukinda Chromite Belt and associated oredeposits. 11. Mineralogical, geochemical and geothermometric investigations in Rajputana-Dariba poly-metallic deposits of Rajasthan. 12. Investigations of rare earths in carbonatite complex in Amba Dorgar, Gujarat.

*Department of Applied Geophysics* 13. Development of a multi-frequency electromagnetic projecting equipment.

*Department of Chemistry, Fuel & Metallurgy* 14. Activation of coke. 15. Interaction of two colouring oxides in low-melting glasses. *Department of Physics and Mathematics* 16. Theoretical study of the propagation of elastic waves in layered media. 17. Spectroscopic studies of some molecules. 18. Studies of nuclear binding and decay problems. *Interdisciplinary Projects* 19. Study of mine water corrosion and its prevention. 20. Pollution of air and water in Jharia Coalfield.

Candidates should have aptitude for research. Qualifications for admission to the different fields of

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davp 811(6)/75

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# THESES OF THE MONTH

## A List of Doctoral Theses accepted by Indian Universities

### PHYSICAL SCIENCES

#### Mathematics

1. Bhave, Vithal Narayanrao. Some studies in graph theory. Karnatak University.
2. Jayarajan, N. Some problems in bivariate interpolation and approximation. I.I.T., Delhi.
3. Kaul, Veena Kumari. Optimal approximations in Hilbert spaces possessing reproducing kernel functions. I.I.T., Delhi.

#### Statistics

1. Sarma, D. Dattatraya. Mineral exploration with particular reference to Kolar gold fields, Mysore State, India: A statistical appraisal. Andhra University.

#### Physics

1. Prem Nath. Structural, thermal, electrical and optical properties of amorphous Ge-alloy films. I.I.T., Delhi.
2. Sant Prasad. Self-focusing and self-distortion of electromagnetic beams in plasmas. I.I.T., Delhi.

#### Chemistry

1. Avsatthi, Kamlesh Labhshanker. Studies on chromatography and optical activity. Saurashtra University.
2. Dhar, M. L. Studies on some metal complexes with newer organic ligands. University of Jammu.
3. Jain, Avinash. Kinetics of the phenol-formaldehyde reaction. University of Delhi.
4. Mehta, Bharati Jayantilal. Preparation and application of specific ion exchange resins. Saurashtra University.
5. Nambisan, P. N. Kesavan. Contributions to the chemistry of 1, 2, 4-thiadiazoles. University of Kerala.
6. Ranganathan, K. R. Flavono-lignans of *Hydnocarpus wightiana* and degradative studies on silymarin. *Silybum Marianum*. University of Delhi.
7. Venkatram, A. S. Kinetics and studies of oxidation of ketones by selenium dioxide. Jiwaji University.

#### Engineering & Technology

1. Gupta, Chandrika Prasad. Linear graph theoretic modelling studies of large scale power system. I.I.T., Delhi.
2. Khan, Abdul Hameed. Kinetic studies on citric acid fermentation from cane sugar and cane molasses. I.I.T., Delhi.
3. Khan, Mohammad Yusuf. Digital computer study of switching surges in nonlinear power systems. I.I.T., Delhi.
4. Reep Dass Prasad. Kantorovich Lebedev transformation. University of Jabalpur.

### BIOLOGICAL SCIENCES

#### Botany

1. Chitnis, Sulekha Raghunath. Palaeobotanical studies on certain Lower Gondwana strata of India. Shivaji University.
2. Mankad, Naresh Ramanlal. Net primary production relation of some grasslands in Rajkot District. Saurashtra University.

#### Zoology

1. Nalavade, Maruti Nirvuru. Studies on mucopolysaccharides of tongue. Shivaji University.

#### Medical Sciences

1. Seshadri, R. Studies on the carbohydrate metabolism of mycobacteria. University of Delhi.

#### Agriculture

1. Choudhury, Ashim. Phytochemical and biological investigation on some plants bearing insecticidal and fungicidal properties. Bidhan Chandra Krishi Viswa Vidyalaya, Kalyani.
2. Choudhury, Bijit Kumar. Cytogenetics of the genus *Lilium*. Bidhan Chandra Krishi Viswa Vidyalaya, Kalyani.
3. Ghosh, Kalyan Kumar. Studies on evapotranspiration and yield of wheat. Bidhan Chandra Krishi Viswa Vidyalaya, Kalyani.

4. Maiti, Bijan Behari. Studies on the ecological background of the life cycle of *Odniporus longicollis* occor (Cecidomyiidae) with special reference to incidence and control. Bidhan Chandra Krishi Viswa Vidyalaya, Kalyani.

### SOCIAL SCIENCES

#### Sociology

1. Namjoshi, Vinodhini G. Social background of nurses in two districts of Gujarat State—Ahmedabad and Bhavnagar: S.N.D.T. Women's University.

#### Political Science

1. Kavlekar, Kasinath Krishnaji. Non-Brahmin regeneration in Southern India and the D.M.K. 1873-1949. Karnatak University.
2. Sarin, Dharampal. Rajneek chetna kee parishudh aur Hindi sahitya. Jabalpur University.

#### Economics

1. Ghose, Aurobindo. Monopoly in a mixed economy: An examination of the Indian case, 1956-73. University of Delhi.
2. Rao, Hem Lata. Centre State financial relations and the problems of financing regional development. University of Delhi.
3. Roy, Lal Mohar. Working of major public undertakings in Bihar. Magadh University.

### HUMANITIES

#### Literature

##### English

1. Minajgi, S. B. Tradition and experiment in modern English poetry with special reference to the poetry of three poets: W. B. Yeats, T. S. Eliot, and W. H. Auden. Karnatak University.

2. Shrivastava, P. K. Joseph Hilaire Belloc: A study of his essays as brilliant prose and satire. University of Jabalpur.

3. Patel, R. N. Jagannath Mishra's Rasakalpadroo Alankarshastra granthi. Ek adhyayan. Gujarat University.

4. Kaushik, Mahavir Prasad. Adhunik ardhantik sanskrita per Bhartiya kavyasastra ke pramukh siddhanton ka prabhav. University of Delhi.

2. Khanna, Mridulla. Adhunik Hindi mahakavya mei pauranik akhayano ka nivta. University of Jammu.

3. Lyall, Savita. Swatantrrotar Hindi upanavason mei yatharth bodh. University of Delhi.

4. Samadhiyan, Narayan Dass. Swatantrrotar Hindi samiksha. Jiwaji University.

##### Urdu

1. Jameel, Syed Akhtar. Mir Syed Ali Ghaznevi Dehalvi: Hayat, shakhsiaat aur shairi. University of Jabalpur.

2. Kishwar Sultan. Jan Nasar Akhtar Hayat-o-san. University of Jabalpur.

##### Gujarati

1. Gadit, J. C. Nanalal's Apadvagadya Rachnaon Bhashanu sahityic adhyayan. Gujarat University.

##### Tamil

1. Ilavarasu, Ira. Descriptive grammar of Perumkatai University of Kerala.

##### Telugu

1. Bharathi, R. Language of the Prabandhas during the Krishna Devaraya Yuga, 1500-1600 A.D. Osmania University.

##### History

1. Agrawal, Bhuneswar Narain. The political philosophy and institutions as expounded in Kamandak Nitisara. Magadh University.

## EDUCATIONAL PHILOSOPHY

Kishore, K. N. "Educational reconstruction: The Journal of the Bhagalpur University—Social Science" 6(3); 1973: 103-16.

## EDUCATIONAL PSYCHOLOGY

Chandrasekhar, U. S. "Questioning and creative thinking: A research perspective". *Education Quarterly* 26(1); Apr 74: 7-9.

Holmes, Jeffrey. "Behaviour patterns of academics late entering teaching: Societal tensions". *University Affairs (Ottawa)* 19(5); May 75: 7.

## EDUCATIONAL SOCIOLOGY

Balakranya, Tisa. "Aspirations of youth for development". *University News* 13(7); July 75: 12-14.

Bayti, Jemsa Lal. "Brain drain: A crucial problem of national importance". *Education Quarterly* 26(1); Apr 74: 10-15.

Gowarikar, D. H. "Student unrest and universities". *University News* 13(7); July 75: 7-8.

Pendleton, Paul. "Bilingual alternative for higher education". *University News* 13(7); July 75: 9-11.

Rathniah, E. V. "Education as an instrument of social change". *Education Quarterly* 26(2); July 74: 26-8.

Verma, M. R. "Academic plight of rural students: Causes and remedies". *Education Quarterly* 26(2); July 74: 29-31.

Wilson, James A. and Gaston, Jerry. "Reflux from the 'Brain Drain'". *Minerva* 12(4); Oct 74: 459-68.

## EDUCATIONAL ADMINISTRATION

Ranbyopadhyay, Swaraj. "University decision-making in theory and practice". *University News* 13(7); July 75: 4-6.

Chakravarti, Susmit. "Law making power and the Chancellor: A case study of Bhagalpur University". *Journal of the Bhagalpur University—Social Science* 6(3); 1973: 117-35.  
"Enemies of academic freedom". (Editorial) *Minerva* 12(4); Oct 74: 403-15.

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Polyby, Nelson W. "Who should shape the curriculum"? *Chronicle of Higher Education* 9(20); 18 Feb 75: 10.

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## CURRICULUM

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Bhattacharya, Bimal. "Voice of a 'countervailing force'". *Times Higher Education Supplement* (191); 13 June 75: 15.

Chatterjee, S. "The university professor as a utility maximizer: The case of research, research and income". *Journal of Economic and Social Research* 1(2); Winter 75: 107-15.

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## EVALUATION

Janki Das and Sharma, I.P. "U.G.C. on examination reform: A critique". *University Affairs (Delhi)* 2; Jan-Feb 75: 17-19.

John, V. V. "Open book examinations". *University News* 13(7); July 75: 15-16.

Klitgaard, Robert E. and Hall, George R. "Are there effective schools?" *Journal of Human Resources* 18(1); Winter 75: 90-106.

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Ribich, Thomas I and Murphy, James L. "Economic basis to increased educational spending". *Journal of Human Resources* 10(1); Winter 75: 56-77.

## PROFESSIONAL EDUCATION

Anant Rao, N. K. "ICAR spearheads farm research, education and extension". *Yojana* 19(10); 15 June 74: 4-7.

## COMPARATIVE EDUCATION AND COUNTRY STUDIES

Anarki Singh. "Who will do baby-sitting?". *University News* 13(6); June 75: 4-9.

Bhalerao, C. N. "N.E.H.U.: An experiment in institution building". *University News* 13(6); June 75: 10-11.

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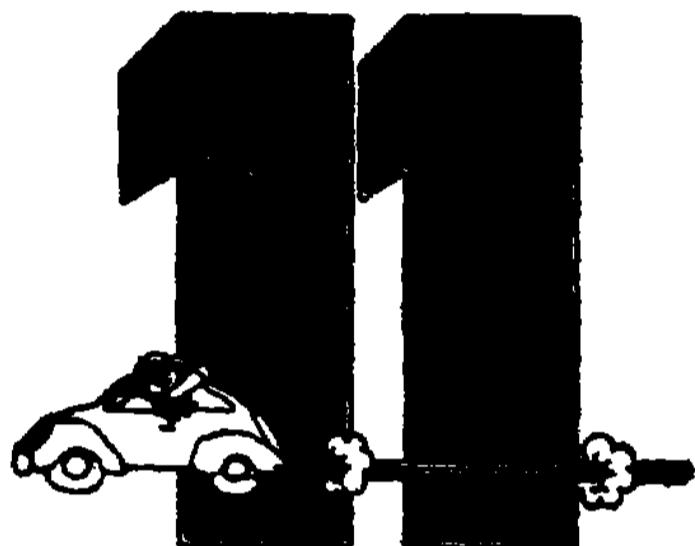
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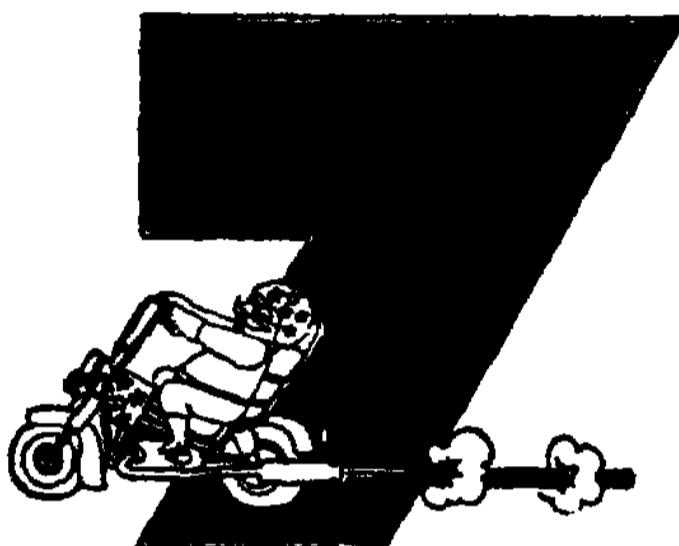
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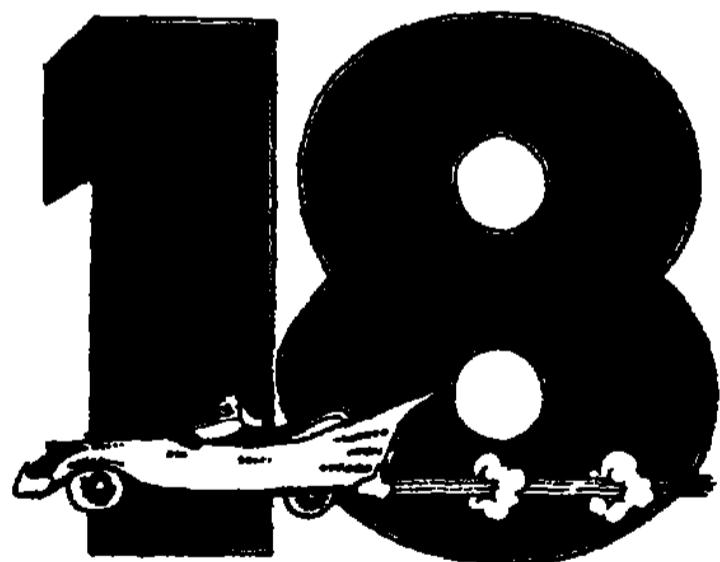
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# University News

Pantnagar—A Panorama  
of Progress

A CHRONICLE OF HIGHER EDUCATION & RESEARCH \* SEPTEMBER 1975 Re 1.25



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training of Engineering students  
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# UNIVERSITY NEWS

Vol. XIII                    SEPTEMBER  
No. 9                    1975

*A Monthly Chronicle of Higher Education*

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

*Editor : ANJNI KUMAR*

## Pantnagar—A Panorama of progress

P. P. PANDE & ABDUL W. KHAN

PANTNAGAR UNIVERSITY established in 1960, is one of the foremost seats of learning in the field of Agriculture Science. Although it is a small campus town on the geographical map of the country but on the economic map, it has come to occupy a very prominent position. The University has adopted a novel system of education involving integration of teaching, research and extension—the three basic tenets for integrated approach to farm improvement which emphasises a balanced approach to the discovery of new knowledge and skills, imparting that knowledge to the youth of the country, and its application on farmer's field to augment agricultural production

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### NEW CEREAL VARIETIES

The University has undertaken research on all the major crops.

**Wheat:** The University has the credit to develop first three-gene dwarf wheat variety UP 301. Another triple dwarf wheat UP 310, suitable for irrigated areas of Punjab, Haryana, Delhi and U.P. has been released for cultivation on farmer's field. The University has developed UP-215 for Peninsular India. Still another variety called UP 319 has been released recently for cultivation in U.P., Delhi, Haryana, Punjab and Rajasthan.

**Maize:** The University has the world collection of maize germplasm. Of the various hybrids and composites developed at this University, the protein-rich composites called 'Protina' has been found to be the most promising. Besides, a number of dwarf hybrids developed by the University are now under final assessment.

A very early maturing yellow maize population, D 747, has been evolved which matures in 80 days and possess yield potential of 40 q/ha. Similarly a white grain composite, D 742, also maturing in 80 days, has been developed. Both these lines possess good tolerance to leaf and stem diseases.

An opaque composite, D 749, developed by this University, is showing great promise. It has the

advantage of enough lysine and tryptophan contents as well as good kernel appearance.

**Soyabean:** Pantnagar is the Centre of All India Coordinated Soybean Improvement Scheme. Here, efforts are in progress to develop new varieties of this protein-rich crop. A new variety of Soybean called Ankur has been released recently. It is suitable for cultivation in U. P., Bihar, West Bengal, M. P., Gujarat and Maharashtra. The variety is resistant to shattering, suitable for early as well as late sowing. The unique feature of this variety is its resistance to rust, bacterial blight, pustules and macrophomina under rained conditions.

**Pulses:** Two varieties of lentil Pant L 406 and Pant L 209, developed at this University are under pre-release multiplication. Similarly three varieties of Bengal gram Pant G 102, Pant G 104 and Pant 110 have been recommended for pre-release multiplication. In arhar, three short duration strains viz Pant A 1, Pant A 2 and Pant A 3 have been developed which mature in about 120 days as compared with 155 days taken by Type 21. Three brown seeded, blight tolerant and high yielding varieties of gram Pant G 102, Pant G 104 and Pant G 110 are also showing great promise.

#### NEW CROPS

The University has done pioneering work in the field of new crops—sugarbeet and sunflower.

Of these, sugarbeet has the potential to yield about one-and-a half times as much sugar in about five months as sugarcane in one year. Under Pantnagar conditions, root yield of 60 tonnes per hectare with 15-17% sucrose has been obtained. Work is continuing for isolation of superior inbred lines with good agronomic characters for development of hybrid and polyploid varieties. Techniques of induced flowering and seed production for breeding varieties have been established. The over wintering method was found quite successful for its commercial seed production in Kumaon hills. Availability of good quality seed produced indigenously would remove serious lacuna in the rapid spread of sugarbeet cultivation.

Sunflower with 45% oil content, has come to be considered as an oil crop of great promise. For growing under rained conditions, varieties EC 27628 EC 21991 and EC 2237 have been found promising. Similarly period from 15 November to 15 December have been found to be the best planting time in winter and 15 February in summer crop. Pantnagar has shown that the crop can be raised in all the seasons.

#### MILK FOR MILLIONS

To usher in white revolution, the Pantnagar University has an ambitious plan of integrated cattle development. The plan includes: (i) creation of a superior germplasm of cattle, (ii) procurement of high quality frozen semen through integrated collaboration (iii) establishment of semen freezing unit, a pilot feed factory based on the utilization of agriculture waste and a soybean processing plant, (iv) provision of adequate and good feed and fodder, credit facilities, technical guidance and proper marketing

facilities and (v) introduction of soya milk as a supplementary source of milk.

The Project will be sponsored by the Pantnagar University with financial assistance from the Govt. of U.P. and Govt. of India and World Bank. The project is estimated to cost Rs. 13 crores.

#### SOYAMILK PROJECT

With a view to eradicate malnutrition, the University has developed suitable technology for processing soyamilk and other soya foods through which the protein value of soybean could be utilized. Soya milk is milk-like product in its appearance. It has about the same protein content as in ordinary milk and therefore can act as an excellent protein supplement to ordinary milk. From one kg. soyabean about 10 kg milk can be prepared.

In the present day milk crisis, soyamilk may prove a boon for the consumers. Soyamilk can work as cheaper substitute for milk. It can be used in pure form or by adding in ordinary milk upto 50 per cent.

#### HORTICULTURAL DEVELOPMENT

The University has a well established Horticultural Research Station covering an area of about 350 acres. Recently a new variety of potato called 'Kufri Deva' has been developed here in collaboration with Central Potato Research Institute, Simla. A new seed potato technique has also been developed which makes it possible to sow freshly harvested potatoes, whenever necessary, after making their dormancy with growth regulators.

A highly significant breakthrough has been made in the control of mango shoot-gall maker in the sub-mountane tract. It has been found that 3 spraying of 0.1% monocrotophos or 0.1% dimethoate applied at 15 days intervals beginning from mid August, successfully control the pest.

#### TECHNICAL BREAKTHROUGH

The University has also been equally active in developing a wide array of handy and inexpensive implements for the benefit of farmers. Of these, mention may be made of potato digger, soyabean thresher, bajra seed drill, lifting patela and mango guthli decorticator, etc. The recent additions are potato grader, grain dryer and anhydrous ammonia applicator.

1. Potato grader grades potatoes into four sizes, viz., less than 3 cm., 3 to 5 cm., 5 to 6.5 cm. and more than 6.5 cm. The machine costs Rs. 1,700 and the cost of grading comes to about 15-20 paise per quintal.
2. The grain dryer has a capacity of about 1 tonne per hour. It can remove complete moisture at a cost of 20-30 paise per quintal and the machine cost Rs. 13,000/-.
3. Anhydrous ammonia applicator is driven by a tractor of 50-70 horse power. Only a part of its machine is imported and the rest of the components are indigenous.

With a view to revolutionize agriculture on small farms, the University has embarked upon, still another ambitious but novel scheme called 'Self-Employment Scheme'. The scheme is running in Etawah,

Shahjahanpur and Nainital districts and is now in the process of being extended to different districts of Rohilkhand, Kumaon, Garhwal and Meerut Divisions of U.P. Under this scheme, farm graduates are encouraged to settle down in their own village to work as self employed farmers-cum-extension worker-cum-dealers in agro-inputs.

#### **SUGARCANE-CUM-SUGARBEET PROJECT**

Sugarcane is one of the most paying cash crops of U.P., particularly in the Tarai area. Sugarbeet, a new introduction in this area, is still more profitable crop and still cheaper source of sugar. The Tarai area provides most favourable conditions not only for the production of sugarcane but also for the production of sugarbeet. In fact, it is one of the unique areas of the world where sugarcane and sugarbeet can be grown side by side in the same field as a mixed crop in separate fields as pure crop.

With a view to utilize modern technology for obtaining high degree of mill extraction, the University proposes to set up a sugarcane-cum-sugarbeet plant in the Tarai area. The project is estimated to cost Rs. 3.75 crores. The factory will be run on sugarcane for five months and on sugarbeet for additional two months, thus, increasing the crushing season by about 40%. The by-products of the mill will be utilized in the distillery for production of power alcohol and in paper mill in the proposed University Industrial Complex.

plan for the area taking into account the plans developed by the State/Central Govt. and other developmental agencies.

- (iv) To help in implementation, coordination, evaluation and rederection of the on going programme in the area.

The work is in progress in Bhikiasen Block of Almora and Baheri Block of Bareilly Districts. The overall goal of RAPRAP is to develop, and extend workable methodologies for rural area development which will raise production, per capita incomes and employment in rural areas, and reduce intra and inter regional disparities of wealth and income.

#### **EXPERIMENT STATION-CUM-EXTENSION CENTRE IN HILLS**

The University is going to set up an Experiment Station-cum-Extension Education Centre at Ranichaori in Tehri Garhwal District. The objectives of the project are to establish an adequate physical base for undertaking comprehensive, problem solving, production oriented research and extension education programmes for balanced and rapid development of agricultural economy of 7 hill districts of U.P. To provide a comprehensive geographical, ecological and agro-economic coverage of the hill agriculture, six sub-centres are also proposed to be set up. These sub-centres would be at Dhaigala, District Tehri (Crop Research), Kanatal, Distt. Tehri and Chaubatia, Distt. Almora (Horticultural Research),



A view of Crop Research Station, Pantnagar



A view of Livestock Research Station Pantnagar

#### **RURAL PLANNING, RESEARCH AND ACTION PROJECT**

The Rural Area Planning, Research and Action Project has been launched with the following objectives :

- (i) To develop base-line data on the existing use of natural and human resources in the area and the resultant levels of production, emp'oyment and income.
- (ii) To identify major economic and institutional constraints on agricultural development.
- (iii) To develop economically feasible and socially

acceptable resource use and development Dehradun and Pipal Koti Distt. Chamoli and Pangu, Distt. Pithoragarh (Livestock Research). The project would cost about Rs. 10 crores.

#### **EXTENSION OF COMMUNICATION**

The Communication Centre, established in 1970, deals with a whole range of communication problems concerning agricultural developments. The centre has well-equipped radio studio for production of farm radio programmes, two monthly journals entitled *Indian Farmers' Digest* in English and *Kisan Bharati* in Hindi and other farm literature for farming community and a close-circuit Television Unit

for on campus teaching. The centre has good programme of communication teaching, research and training. It also supports the academic programme of the University by providing instructional equipment and material. Besides, the programmes prepared by Communication Centre Pantnagar are being broadcast from 6 stations of AIR namely, Rampur, Lucknow, Gorakhpur, Raipur, Ranchi and Varanasi.

The University, with a view to developing a coordinated programme of rural development, has decided to enlarge the existing communication centre into a Centre of Communication for Rural Development. The proposed Centre intended to bridge the gap between the availability of agricultural technology and its application in the field, would be a joint venture of the UNESCO, ICAR and Pantnagar University.

#### QUALITY SEED FOR ALL

The production of nucleus foundation and certified seeds is a highly technical job to be carried out under close and constant guidance and supervision of highly qualified scientists. The quality seeds of high yielding varieties are, no doubt, true seeds of green revolution. With a view to supply quality seed to the farmers, the University established Tarai Development Corporation, a 20 crore project supported by Government of India and the World Bank in 1969. The Corporation has an ambitious programme for production, processing and marketing of 47 000 tonnes of seed per annum by 1975-76.

Till recently, the seed production activities of the Corporation were confined to the holdings of share holders in the Tarai Seed Project area. But now, the Corporation has taken up soyabean seed production in Almora district in collaboration with Indo-German

Agricultural Development Agency. Similarly, some sub-centres for seed production are also under consideration of the Corporation. Its seed production programme has been diversified to meet the requirement of the farmers and to give dealers and distributors a hold on the market. Now, besides cereal seed production, the TDC will take up seed production of oil seeds, vegetables, forage and fibre crops as well. The Corporation is planning to establish a new 20,000 tonnes seed processing plant and a 10,000 quintal capacity cold storage in near future.

#### A STRONG EXTENSION SERVICE

The new discoveries and investigations are coming so fast that the farmers and extension workers have to be in close and continuous touch with the centres of agricultural research and education to keep abreast of constant flow of new ideas. It is not possible for 65 million farming families of India to remain in touch with the Agricultural University and other radiating centres of scientific agriculture directly. The University has been quite conscious that its massive research efforts would be of no avail, if the research results failed to reach the farmer in the field. Therefore, the University has organised a strong extension service which strives to bridge the awesome gap between the laboratory and the farmer. It has carried methods and materials of value to the farmers. Now with the assignment of area responsibility of Rohilkhand, Meerut, Kumaon and Garhwal divisions of U.P. to the University, the extension education programme of the University at district level is proposed to be strengthened according to the need of the area. This strategy of extension work may be a forerunner of similar pattern in other parts of U.P. as well as other states.



#### BRAIN DRAIN

"Our entire batch will be reunited in the States provided we all pass in the qualifying exams at Kuala Lumpur..."

# Young Universities in the Soviet Union

K.I. SBNITKO

THE sixty-three universities in the Soviet Union include a number of very important institutions which have long been known for the high quality of their teaching and research, among them being Universities of Moscow, Leningrad, Kiev, Vilnius, Tartu, Tomsk and Tashkent. But there is also a group of young universities established during the past decade: Donetsk (1965), Kaliningrad (1967), Chuvash, Gomel, Kuybyshev, Krasnoyarsk, North Osetin (1969), Yaroslavl, Ksalmyk (1970), Kalinin (1971), Simferopol, Karaganda, Mariysk, Checheno-Ingushsk (1972), Altay and Tyumen (1973). State Universities, as well as the State Universities of Omsk, Kemerov and Ivanov which commenced first academic year in 1974.

The opening of a new university is a major event, not only for the institution itself, but for the whole region in which it is situated. The University of Gomel, for example, is destined to become the second major university centre in Byelorussia. But why should a new university be set up in a Republic which is well-developed economically and already has a large number of institutions of higher education and research? The reason is that scientific and technical progress in industry and agriculture and the need to extend educational, scientific and cultural facilities are creating new demands for graduates in mathematics, physics, biology, economics and a number of other university fields. The existing Byelorussian State University in Minsk will still not be in a position to fulfil all the growing demands, although it too has been expanding rapidly. Besides training high-level manpower for the economic, educational and scientific development of the Republic, the new University will also play a major role in promoting the industrial development of Poles'ye.

The opening of the University in Yaroslavl in fact constituted the revival of an institution which originated in a decree signed by Lenin in 1918. Three faculties were already functioning in the years 1922-24; medicine, agriculture, and education, with more than 2000 students. A number of well-known scholars taught and studied there and in 1924 a series of independent institutes was created on the basis of the separate faculties. Now re-established on a completely new basis, the University is on the threshold of important developments. The Yaroslavl area is of great industrial importance, notably in the fields of automobile, mechanical and chemical engineering. It already has a large number of speciali-

The author is in the Ministry of Higher and Specialised Secondary Education in USSR. In this article he describes the development of a series of new universities set up in Soviet Union since 1965.

sed institutions of higher education and research, and until now the region's need for mathematicians, physicists and biologists has mainly been met by graduates from the pedagogical institutes (colleges of education). The establishment of the new university will provide university graduates needed in the Upper Volga region and in the Northern European part of the USSR, and this stimulus will help to raise the level of research and contribute to scientific and technical progress in industry and agriculture. The significance of this university (like that of those set up in Kalinin and a number of other towns) is growing rapidly in connection with work on the intensification of agriculture in the less fertile (non-Black-Earth) zones of the Russian Federated Republic.

The Universities in Krasnoyarsk, Barnaul, Tyumen, Omsk and Kemerov will similarly contribute to the improvement of secondary and higher education, and provide graduates for the continuously developing economy of Siberia.

Altay University, for example, was established in the centre of a large industrial and agricultural region with a population of approximately three million. In the past it has been less well provided with university-level graduates than other regions of the Russian Republic and the graduates of its six institutions of higher education were not sufficient to meet its needs. Altay University will train graduates in mathematics, physics, economics, law and other fields, and will help to raise the level of training in other educational establishments. It is also expected to make a major contribution to the study of the ways of using the enormous natural resources of the region and of developing its industrial production. Other new universities in the Russian Republic, in the Ukraine and in Kazakhstan face similar tasks.

Some of the universities opened only a few years ago have already become large and important institutions. The Donetsk University, for example, has more than 12,000 students. At the Kuban University there are 9,800 students, at Chuvash approximately 8,000 and more than 5,000 each at Kalinin, Gomel and Simferopol.

The major problems faced by the new universities are naturally those of expanding as rapidly as possible and of achieving high standards in their training and research, for their youth cannot be allowed to serve as an excuse for low standards.

Some universities, including Donetsk, Gomel and Kuban, incorporated previously existing pedagogical institutes (colleges of education) and thus started out with a nucleus of academic staff, students, buildings, residences, etc. But transformation into a university is a major undertaking and naturally necessitates significant changes. The organizational structures of the institution has to be modified, as the content of the courses offered. In such circumstances the first years of a new university's existence are usually accompanied by difficulties associated with the need to enlarge the academic staff and reorganize laboratories, with lack of experience of university-type

work, and with the existence of teaching facilities not designed to accommodate new departments.

In a number of other places universities were set up as completely new establishments—for example, Kuybyshev, Yaroslavl, Omsk and Altay. In such cases it is usual to start by admitting only first-year students. Provision for the subsequent years of study is made progressively. These universities do not face the problems of transforming from one type of institution to another but they do have their own special problems.

The increase in the number of universities makes it possible to share the training of graduates more rationally between them. However, there is a tendency for young universities to try to extend the range of their fields of study too rapidly, often without even taking proper account of the manpower needs of the particular region they serve and of the limits of their own ability, as new institutions, to provide high-level training. They overlook that the successful development of a new institution depends to a considerable extent on its structure and on the particular fields in which it provides training. Years of experience have shown that a university is not simply a mechanical assemblage of different fields of study and that the training of engineers, teachers, doctors, and of graduates for a number of other professions can be carried out more rationally in specialized institutions. Apart from this, the existence of a large number of fields of study in an institution with only a small student enrolment in each of them leads to a large and excessively wide variety of teaching departments, which cannot but lower the level of teaching and results in there being insufficient funds for expenditure on the equipment of laboratories, etc. This is the area in which the special problems of new universities arise. It is sometimes incorrectly believed that specialized fields of study in universities and pedagogical institutes are identical. There is, in fact, a considerable difference in the training of their students, and the range of subjects taught in pedagogical institutes is characteristic only for institutions of this type. The process of carrying these subjects over into a new institution of higher education while at the same time adding others creates difficulties in terms of both teaching and material conditions. In such situations, some loss of quality in training is inevitable, at least for a time. Therefore, a new university should start with a relatively small number of fields of study, and all should be appropriate to a university. The number can be increased at a later stage. Some of the most important problems facing all new universities are concerned with the staffing and the organization of the work of their teaching departments. This is an area in which the new universities have all done much work. For example, the number of academic staff in the new universities in the Russian Republic has increased to 4,500 from the total of 2,500 in the pedagogical institutes on which they were based. The number of teaching staff holding high academic qualifications has also increased considerably. But in some of the basic disciplines there are still not enough highly qualified teachers, and unfortunately some of the

senior staff in the new universities have themselves come from institutions which were already not over-endowed with highly qualified teachers.

The staffing of new universities evidently requires a special approach. In dealing with it, a particularly important role should be played by the older universities. They should train and send to their young sister institutions whole teams of teachers. This would eliminate the element of hazard in the selection of staff and create conditions in which it will be possible to found schools of scholarship and maintain in the new institutions the best traditions of the older universities. In the early 1920's teams of teaching staff were sent in this way to Tashkent, Byelorussia and a number of other new universities, and this gave very good result. Today the Universities of Moscow, Leningrad, Kiev, Minsk, Tomsk and Novosibirsk could release some of their staff for similar tasks and train some of their graduates in all disciplines as academic staff for the new universities. More direct use could also be made of trainee teachers and post-graduate students. The contemporary university is a large complex comprising faculties of various branches of knowledge—research institutes, a library, teaching and research laboratories, a computer centre, museums, a botanical garden, student residences, sports facilities and many other components. Its establishment, therefore, requires much time and a very large investment even if a new institution is able to take over some existing facilities.

The new complex of buildings and equipment of the Donetsk University is an example of the great efforts which have to be made to provide new universities with modern facilities for teaching and research. In fact the teaching and laboratory facilities of the new universities in the Russian Republic are now 86% larger than those they originally took over. On average, they have residential facilities for 82.8% of students coming from other towns and districts, compared with 47% when the universities were opened.

The role played by local and district authorities in all these matters is, of course, very important. In Yaroslavl, Syktyvkar, Krasnodar, Barnaul and a number of other towns, buildings, student residences and houses for staff were immediately provided or built. In Omsk special buildings were constructed for the Faculty of Chemistry and provided with modern equipment. In all, the local authorities gave buildings with a surface of more than fifty thousand square metres to the newly established universities. Considerable assistance was also given for the adaptation and equipment of previously existing buildings which were made available to them.

But the needs of the universities are growing, and in a number of places it is not easy to satisfy them. All growth implies the task of making the most effective use of available resources and local possibilities to improve the academic and material infrastructure of the institution. The main shortcoming in this area is the dispersal of efforts and material resources between a large number of objectives and fields of work. By concentrating efforts and

(Continued on Page 27)

## The Learner of English

ONE of the aims of education is to enable the learner to learn think, examine and evaluate for himself when he has ceased to be a pupil. However, we notice that even after many years of attendance at school, students are not able to study and learn independently of teachers. The methods usually adopted for passing the examination—use of guide books and dictated notes—so incapacitate the students that they are not able to stand on their feet. It is necessary that we combine with school and college teaching some training in working independently of the teacher and guide-book.

This can partly be achieved by giving students practice in reference skills such as using dictionaries and encyclopedias. We have now available a very wide range of dictionaries from general reference books to specialised dictionaries such as the dictionaries of art, biology, etc. These dictionaries contain a mine of information and can be valuable sources of knowledge to our students.

It is not the purpose of this article to examine the various dictionaries and describe what they have to offer. The article deals with five major American college dictionaries. However, none of these have been specially compiled for the foreign learner of English like the *Oxford Advanced Learner's Dictionary of Current English*. It appears relevant therefore, to say something about this dictionary and its usefulness for the non-native learner of English.

The dictionary was first prepared for the Institute of Research in English teaching, Tokyo and published there under the title *Idiomatic and Syntactic English Dictionary*. The Oxford Uni-

versity Press reprinted the dictionary in 1948 and named it *The Advanced Learner's Dictionary of Current English*.

The three compilers of this first edition published in 1942, Hornby, Gatenby and Wakefield were then teaching in Japan. In the preface to the second edition (1963), Mr. Hornby says, 'Because many users of this dictionary are likely to welcome help in the composition of English, the guidance on syntax, in the form of references to verb patterns, has been reprinted in the new edition. The references to verb patterns are, in most cases, followed by illustrative phrases and sentences that show the patterns in use'.

This quotation from the compiler's preface sums up the most important features of the dictionary. These features may be illustrated from two entries in the dictionary. The entry "enthusiasm" contains the following information:

First the pronunciation in the phonetic script with the stressed syllable is indicated. The American pronunciation is also indicated.

After mentioning that the word is a noun, the dictionary points out that the word is an uncountable noun. That is, its plural form is not used, nor is the indefinite article normally placed before it.

The notion of countability and uncountability is basic to the use of nouns in English. Use of the plural form and the choice of the article depend on this. This dictionary is one of the very few to provide information on this point, which is very useful for the non-native speakers, especially those who have no articles in their languages.

Many non-native users of English must have found it diffi-

cult to decide what preposition should follow 'enthusiasm.' Anticipating such difficulties of foreigners, the compilers make it clear with the help of illustrative phrases that both 'enthusiasm for' and 'enthusiasm about something' are correct. There are other phrases too illustrating 'enthusiasm' in its usual collections, such as: *arouse enthusiasm in somebody*; a play that *moved the audience to enthusiasm*, *an outburst of enthusiasm*.

The rest of the entry is about *enthusiast*. *Enthusiastic* is a separate headword.

Now an example of a verb may be taken up. Against the word "contest" as verb, it is stated that it can be used both transitively and intransitively. For each of the three meanings in which the verb can be used, the appropriate verb pattern is mentioned. Thus the learner can clearly understand that as transitive verb *contest* can be used in the pattern 6A wherein it has a noun or pronoun as direct object: *we contested the point*. As an intransitive verb, it belongs to VP 3A and is followed by a preposition and an object: *He is contesting for a prize*. The entry shows the pronunciation and functional shift in accent. 'Contest' as verb has accent on the second syllable; the first syllable has a weak vowel. As noun the word is accented initially. But 'contestant' has the accent on the second syllable. The rest of the entry is taken up with *contest* as noun.

In other areas of information such as spelling, syllabification style, etc., the *Advanced Learner's Dictionary* is like any good dictionary. As it is designed mainly for foreign learners, it is not as comprehensive in its vocabulary as are some other single volume dictionaries. Also, it carries no information on etymology, nor does it contain synonyms and antonyms as some American dictionaries do.

The appendices though useful from the foreign learner's point of view (they list irregular verbs

affixes etc.) are not as comprehensive as they are in some other dictionaries such as *The Random House Dictionary of the English Language*.

Despite these, the outstanding value of the *Advanced Learner's Dictionary* for the foreign learner remains unsurpassed. The guidance on usage and structure that it offers is an indispensable aid for any learner especially when he is writing and is in doubt about what pattern, form or phrase to use. Keeping in mind the problems of the non-native

user in choosing the appropriate expression for a particular register and style, the compilers of the dictionary provide information, where relevant, on style and Register. They also give hints on punctuation and point out the peculiar features of English grammar, while dealing with usage. If a dictionary can provide so much help for the learner of English, it may be well worth training the student in reference skills, at least in making him discover the information a dictionary contains.

—V. D. S.

(Courtesy: C.I.E.F.L. News Bulletin)

of educational objectives—Shri Asan Mitra: Some considerations relevant to the formulation of National Programme of Population Education—Mr. J.E. Jayasuriya; Population Dynamics and educational development—a selected Bibliography—UNESCO; Curriculum development in population education—Dr. H.K. Paik: Report of a Field-Try-out of population education course at Reconsi, Malaysia—an experimental study (Dr. H.K. Paik); A field try-out of population education curriculum materials for teacher education programmes—an experimental study: A case of the Philippines—Dr. H.K. Paik; Extracts from the final Report of the Regional Seminar of Experts on Population Dynamics and Educational Planning, Bangkok that was held on Sept. 10-18, 1974.; Extracts from World Population plan of action as finally adopted by the World Population Conference at Bucharest on 30th August 1974, and Population Dynamics and Education: Bibliography—National Staff College.

This Expert Meet participants include not only the consultants of the UNESCO but very distinguished educationists, population specialists, demographers and educational planners.

The main objectives of the Meet were :

(i) to examine different aspects of the relationship between population dynamics and education;

(ii) to identify and delineate areas of high priority for further enquiry and research in this field and,

(iii) to make concrete recommendations towards promoting a clearer understanding of the relationship between population dynamics and education among educational planners and administrators.

The recommendations include the following:

(i) Studies to be made on the causes due to which sharp increase in literacy rates were observed in the 1941 Census and studies related to human capital

## Conclusions and Recommendations

### GROWING MULTITUDES AND THE SEARCH FOR EDUCATIONAL OPPORTUNITY.

*Report of the National Meet of Experts on Population Dynamics & Education, held at New Delhi October 28-31, 1974.*

THIS important and topical report is divided into three parts;

Part—I gives the main particulars of the Meet including objectives, summary of discussions on papers and the recommendations and a summary of the closing session.

Part—II is a record of the main presentations and discussions on population dynamics, Educational Development and the role of UNESCO (Dr. D. G. Berstecher); The population Challenge and the Response of Education in the Asian Region (Dr. H.K. Paik); A Review of Literacy Data collected in the Censuses of India (Dr. V.R. Rao); Literacy and Educational Implications of 1971 Census (Registrar General of Census), Role of Non-formal Education in Population and Development (Shri J. Veeraraghavan); Rural-Urban Migration and its Implications for Education (Miss A. Chatterjee); Population Dynamics and Training of

Educational Administrators and Planners (Shri C.B. Padmanabhan); Fertility, Family Planning and Education of Women in India (Miss) Jatinder Bhatty and Miss A. Chatterjee; Child Care—a national priority Dr. (Mrs.) S. Ghosh; Women's Education and Practice of Family Planning in India (Dr. M. K. Premi); Women's Education and Practice of Family Planning in India (Dr. Mrs. K.G. Rao); Population and Environment and their place in Education (Dr. Ashok Khosla); Population Education, an Innovation Status and Prospects (N.C. E.R.T.); Population Dynamics and Teacher Education (Prof. B.S. Parikh) and Presentation of Conclusions and Recommendation of the Meet

Part-III consists of the following additional papers besides the above mentioned papers which were discussed in Part-II.

Family Planning in Medical Education (Dr. George Joseph);

Background papers included in the report are :

Population Dynamics and Educational Planning: A Framework of Discussion—UNESCO; Impact of population dynamics on socio-economic and educational development in Asia and on the definition and attainment

formation emphasising the levels of educational attainment in terms of years of schooling completed and levels of earning by levels of education.

(ii) importance of national sample survey covering detailed analysis of unemployment and educational attainment (27th round) and the value of the social statistics divisions of the CSO which is looking into the question of studying stock and flows of human beings and their educational attainment;

(iii) A study was suggested for the spectacular growth in female literacy which unfortunately has not been accompanied by a similar increase in male literacy;

(iv) Studies are suggested which throw light on the factors which promote literacy;

(v) that special efforts will have to be made to raise the literacy levels of the socially and culturally disadvantaged sections of the population in view of the widening gap between the literacy rate of the scheduled castes and tribes on the one hand and the general population on the other.

It is brought out that while the general literacy percentage has gone up in 1971, the improvement is not sufficient to reduce the absolute number of illiterates in the population:

The spread of literacy seems to be faster in those States where it was already high in 1961:

In districts, literacy is high in continuous blocks

(vi) The meet also suggested that careful post-census literacy checks should be carried out to determine the degree of error in statistics in relation to age group 5-9 which is low though participation rate of this group is very high.

(vii) The rural-urban migration was considered in depth, and the widening gap between the urban and rural areas in educational, economic, social and cultural development has been focused.

(viii) As regards women education and family planning, the Meet quoted several studies to show that there is an inverse relationship between fertility and

education: the higher the educational level, the lesser the fertility.

(ix) It was considered that threshold level of education which influence fertility may be as high as 10-14 years of schooling.

(x) It was however felt that greater reliance will have to be placed on the use of mass-media and on the programmes of non-formal education for spreading the message of family planning and to popularise the small family norm.

### CHILD CARE

An Integrated child health programme was considered to be of critical importance in reducing infant and child mortality which has been recognised to be a deterrent to the acceptance of birth control.

### POPULATION EDUCATION

Population education should give "the learner an idea into the totality of issues connected with population ranging from the nature, measurement, causes, determinants and consequences of population growth as well as urbanisation to the dynamics of the reproductive process and to possibilities of planning the family size and population control. Several curricula were examined.

The Meet has favoured the idea of population education as a much wider and positive concept with an openminded approach both at macro levels. It was however felt by the Meet that population education should not merely be subservient to the idea of population control.

The Meet realised that population education should be introduced in half million schools of the country though it is not an easy task.

The need for preparation of curriculum and development of suitable instructional materials was considered essential.

The work of the NCERT in this connection was considered very significant.

The Meet also emphasised the need for research, teacher preparation and sex education.

### NON-FORMAL EDUCATION

It was noted that the formal school system does not cover more than 7% of the population in the age group of 15-24 which

is of very great importance from the point of population control. It was therefore decided that non-formal education and literacy should be given the highest priority. It should be considered as a form of continuing education to those who have been at school and also educational literacy for those who have had a privilege of formal education.

The need for research and also the necessity to have a dialogue between educational planners/administrators and demographers, through promotion of joint meetings on the educational implications of rural-urban migration :

The Meet in their major resolution recommended the following :

"That the National Staff College for Educational Planners and Administrators, New Delhi, may invite UNESCO and other International agencies to promote and develop regional cooperation among the Asian countries in the growth of population education through (i) the organisation of studies and research in the planning and administration of population education (ii) the training of personnel for the purpose and (iii) the provision of clearing-house facilities and dissemination of information.

Prof. Mathur in his concluding address made some fundamental suggestions that (i) the training of teachers to teach the new subjects effectively and purposefully into the school curriculum should include population education. (ii) He also emphasised the importance of special programme for Universities (iii) He particularly made a reference to the role of education as an instrument of national development and that every learner at every stage must learn a type of education and to be a student all his life.

This report on the "growing multitudes and the search for educational opportunity" is an excellent document which may be edited further and printed for the benefit of educational institutions, universities, schools at different levels and teachers for reference.

—K. N. RAO

# ROUND UP

## U.N. Workshop on bio-gas Technology

A WORKSHOP on bio-gas technology and utilization was held in New Delhi. It was inaugurated by the Prime Minister of India, Mrs. Indira Gandhi.

Organised by the Economic and Social Commission for Asia and the Pacific (ESCAP), in co-operation with UNIDO and the Indian National Committee on Science and Technology, the Workshop was attended by 30 experts in the field from 14 countries.

The Workshop has before it, as the basic material for discussion, a report by a three-man committee of experts which has studied the role of bio-gas in six Asian countries—India, Pakistan, South Korea, Japan, the Philippines and Thailand.

In the light of the findings of the Committee, the Workshop

examined the different methods of bio-gas production and identified major technical and social development problems to improve production. Internationally reputed consultants on bio-gas technology and utilization presented brief reports based on their own experiences.

The workshop considered suggestions and recommendations for the development of bio-gas plants and integrated farming systems at national and regional levels. Proposals for specific projects to be financed by UNDP and other international financial organizations were also discussed. The Workshop concluded on 2 August, after a field trip to Bombay-Borvili to visit KVIC bio-gas research and development station and other installations.

### OPI Interne Programme

FIFTY-NINE participants from 27 countries are taking part in a four-week Student Interne Programme at United Nations Headquarters which began on 28 July. The purpose of the Programme is to enable the participants to deepen their understanding of the principles, purposes and activities of the U.N. and its related agencies through first-hand observation and study.

The Interne Programme, which is organized annually by the Office of Public Information (OPI), is open to a limited number of university students at the graduate level. These young men and women from different countries

are specializing in fields related to the work of the United Nations, such as international relations, government, political science, law and economic and social affairs.

The Programme includes briefings by senior officials of the United Nations Secretariat as well as prominent outside speakers such as Lincoln Bloomfield Professor of Political Science at the Massachusetts Institute of Technology, and James Leonard, President of the United Nations Association of the United States of America. The participants also attend panel discussions and meetings of the United Nations bodies which are in session during the period of the Programme. In addition, the interns are assigned to work individually alongside United Nations staff mem-

bers in various departments according to their respective fields of study.

Participants come from the following 27 countries : Canada, Cuba, Czechoslovakia, Dominican Republic, Ecuador, Federal Republic of Germany, Finland, Iceland, India, Japan, Kenya, Liberia, Mauritius, Mexico, Netherlands, New Zealand, Nigeria, Pakistan, Spain, Sweden, Thailand, Tunisia, Venezuela, Trinidad and Tobago, United Kingdom, United States and Western Samoa.

### Mehta Research Institute

WITH the financial help of Mehta Trust and the grants from the Governments of India and Uttar Pradesh the Mehta Research Institute of Mathematics and Mathematical Physics has been started at 26, Dilkusha, New Katra, Allahabad-2. Simultaneously, Mehta Institute is developing its own campus with adequate and modern physical facilities at Bharwari, a township situated at about 20 miles from Allahabad on the main railway line between Delhi and Calcutta on the fifty-acre plot donated by Shri G.L. Mehta, a business magnate known for his philanthropy all over the country with the help of donation of rupees four millions made by him.

In the first phase (1975-78) the Institute will devote itself to the following branches of pure Mathematics and applications of mathematics which are of current interest : (1) Pure Mathematics, (2) Applications of Mathematics.

During the second phase research facilities will be developed in the following branches of Mathematical Physics which have attained special importance recently : (a) Non-equilibrium Thermodynamics ; (b) Quantum Physics, Phase Transitions (c) Relativistic Mechanics, General Relativity.

Prof. P.L. Bhatnagar, former Vice-Chancellor, Rajasthan University, known for his contributions to Applied Mathematics, Fluid Dynamics, Plasma Physics, Astrophysics etc., has taken charge of the Institute as its first Director.

## O.N.G.C's Refresher Course

A THREE months' refresher course for a batch of twenty production engineers of the Oil & Natural Gas Commission (O.N.G.C.) concluded at Indian School of Mines recently. Shri J. C. Kumaramangalam, Chairman, Indian School of Mines, presided at the valedictory function and distributed certificates to the participants. In his valedictory address he expressed the hope that the refresher course, the first ever to be held for the officers of the O.N.G.C. at I.S.M., would be the forerunner of many more in future.

Organised by the ISM Department of Petroleum Technology, the Refresher Course was inaugurated by Shri A.K. Ghose, Member (Production), O.N.G.C. During the course, more than 400 hours were devoted to lectures, seminars and laboratory work by the ISM Faculty members as well as Guest Faculty members from O.N.G.C., Oil India Ltd. and Assam Oil Co. Ltd. Besides this, twelve special lectures were also delivered by senior officers from the Oil Industry. Technical visits were arranged to Research Laboratories and industrial establishments around Dhanbad. Technical films of relevance were also screened for the benefit of the participants. Adequate lodging and boarding arrangements were made for the participants of the refresher course in a separate hostel earmarked for such purposes.

## Bangalore to Evaluate SITE

THE University Grants Commission has offered a sum of Rs. 1.5 lakhs for the evaluation of the Satellite Instructional Television Experiment (SITE) to the Bangalore University. Dr. K.E. Eapen, Professor and Head of the Department of Communication will be conducting the research in the Karnataka cluster. An attempt would be made to determine whether and how the medium

of satellite television can be used effectively for agriculture, family planning, improved primary schooling, health and hygiene and national integration. A systematic investigation is necessary to determine the nature, magnitude and direction of developmental changes brought about by satellite TV. The effective use of this medium requires enough research. This is being met partially by the Evaluation Cell of ISRO but the Bangalore University would be the only outside academic institution which is likely to investigate the SITE. The investigation will involve over a year of field work in Gulbarga, Raichur and Bijapur districts followed by another year of data analysis and writing up of the research findings and final report.

## Savings Drive: Students to Assist

SERVICES of college students in Kerala are to be utilised in a big way for the promotion of small savings among the people of the state. A meeting of the representatives of the Universities of the Central and State institutions connected with national savings was convened in this connection at Trivandrum. It was decided to organise a short training programme on various aspects of small savings and canvassing techniques. To start with 30 students from the colleges under the Kerala University will be selected for this programme. The students would be associated closely with the national savings programmes. It is expected that groups of five students each will be put on field work to popularise national savings schemes and canvass consents for opening new accounts. Prof. Sukumar Azhikode of Calicut hoped that the students of his university would also come forward for this programme.

## Student Rep. on IIT Bodies

The authorities of the IIT, Delhi, have decided to give representation to students on its bodies.

The Senate at its meeting held recently resolved that there shall be three students representatives who may be invited to the deliberation of the Senate.

## Campus for L.N.M. University

THE 300 acres complex of Darbhanga Raj with buildings and structures has been acquired by Bihar Government for the Lalit Narayan Mithila University. The University at the moment is running in tiny rented buildings on the outskirts of Darbhanga town.

Rajkumar Subheshwara Singh of Darbhanga further proposes to donate the rich Raj Library for the use of this university. The three-year old Mithila University is the largest university of the State in respect of area, population and number of colleges and students. The development of the campus has been one of its urgent needs. This acquisition of land would give a fillip to the post-graduate teaching which could not be developed so far due to lack of buildings and library facilities.

## Gulmarg Observatory

THE Syndicate of the University of Kashmir has set up a committee to discuss the future functioning of the Gulmarg Research Observatory in consultation with Dr. N.N. Raina, Head of the Postgraduate Department of Physics and Dr. M.K. Khera Incharge, Gulmarg Research Observatory.

The Syndicate further decided that the decision regarding provision of liberal choice in the question papers relating to the BA/BSc/BCom Parts I and II examinations 1975 be taken by the Vice-Chancellor after discussing the matter with the state authorities who would ascertain the views of the principals of the colleges concerned. It has also been decided to introduce table marking on experimental basis for the Pre-University courses from this academic session.

## **Chair in N. Chemistry**

**K. C. MAHINDRA CHAIR** in Nuclear Chemistry has been created at the Institute of Science, Bombay. The Government of Maharashtra has given its approval and a sum of Rs. 2.78 lakhs would be kept in fixed deposit for financing this Chair.

The K.C. Mahindra Foundation Endowment will be managed by an Advisory Committee under the chairmanship of the State Education Minister. It would help developing Sciences having practical applications and ramifications for Military, Naval, and Aviation Science.

## **Reservation for Higher Learning**

**PROFESSOR** Nurul Hasan, Union Minister of Education while replying to the debate in the Lok Sabha on the motion to consider the annual report of the UGC for 1972-73 said that the UGC had recommended that seats be reserved for scheduled castes and scheduled tribes in national institutions and institutions of higher learning.

## **No Convocation for J.N.K.V.**

**FOLLOWING AN** instruction from the Chancellor, the Jawaharlal Nehru Krishi Vishwa Vidyalaya has decided not to hold convocation this year too.

Degrees and diplomas to the graduates of agriculture, veterinary and animal husbandry and agricultural engineering would be sent to the qualified candidates directly by mail or would be given in person on payment of requisite fee.

Candidates who have been declared eligible between April 16, 1973 and April 26, 1975 may obtain their degrees from the Registrar or any of the constituent college of the Vishwa Vidyalaya.

It may be mentioned that 470 candidates in agriculture, 123 in

veterinary and 49 in agricultural engineering have been declared eligible to get their graduation degrees; and 118 candidates in agriculture and 30 in veterinary faculties to get post-graduate degrees and one research scholar for Ph.-D. during the last two years.

## **Visiting Professorship for Dr. Mohan**

**DR. RAMESH MOHAN**, Director, Central Institute of English and Foreign Languages Hyderabad has accepted a Visiting Professorship at the University of Illinois, Urbana, during August-December 1975. On his way to States, Dr. Ramesh Mohan will visit some universities and institutions of higher learning in Germany, France and Britain.

In his absence, Dr. R. K. Bansal, Professor and Head of the Department of Phonetics and Spoken English, will act as Director.

## **Land for South Campus**

**DELHI UNIVERSITY** has recently acquired about 50 acres of land near Daula Kuan to develop its South Campus. At present the offices are located in rented costly buildings. A sum of rupees one crore has already been sanctioned for the development of the campus. This would facilitate the early development of the new land and it is expected that a viable and independent campus with good library facilities will be built soon.

## **Effects of Noise**

**THE** Zology Department of Calcutta University is planning to undertake a study of the effect of noise on human beings and various other biological species. Prof. D. N. Ganguly has submitted a comprehensive plan to the National Committee on Science and Technology on the effect of radiation and sound as found in nature and as created by the industrial-urban development on the growth, functioning,

reproduction and aging of various biological species including man.

Though elementary ideas about the effect of sound pollution is available, the particular effects of sound vibrating at or about 20,000 cycles per second, i. e. ultrasonic waves on the life process of different animals as well as man has not yet been studied seriously and extensively. A comprehensive study in this line is very much needed in view of the fact that in most of the establishments and undertakings where turbo-jet operators or high pitched sound is produced from sirens, hooters or whistles, production of ultra-sonic wave along with audible sound is a normal occurrence. Though it is known that the use of ultra-sonic waves is safer than X-Ray's there are instances of its chromosome breaking activity. A large area in the city of Calcutta is exposed to continuous noise from morning to night at a level much above 90 decibels. A regular survey of the stress produced by the noise will reveal the cause of the psychopathology of the citizens of Calcutta and the correct reasons for the incidence of enhancing psychosomatic ailments of its residents.

## **Vidyasagar Varsity**

**MR. AJOY MUKHERJI**, former Chief Minister of W. Bengal, recently led a deputation to Mr. S. S. Ray, Chief Minister, urging him set up the Vidyasagar University in Midnapore to mark the 155th birth anniversary of Pandit Iswar Chandra Vidyasagar.

## **PVCs for two varsities**

**THE** Punjab Vidhan Sabha recently amended the Guru Nanak and Punjabi Universities Bill to provide for the creation of the post of Pro-Vice-Chancellors. Unlike the other universities, the Pro-Vice-Chancellors in Punjab would be appointed by the Chancellor on the advice of the State Government. The Pro-Vice-Chancellor will hold office for three years and this term may be

extended for a further period of not exceeding three years at a time. The tenure of the Pro-Vice-Chancellor will not be co-terminus with that of the Vice-Chancellor. The Chancellor would also determine the amount of remuneration etc.

The Pro-Vice-Chancellor would assist the Vice-Chancellor in respect of such matters as might be specified by the Vice-Chancellor. He would exercise such powers and perform such duties as may be assigned to him by the Vice-Chancellor. It is expected that the Pro-Vice-Chancellor will be selected from amongst Professors, Heads of Departments and such others as are competent from the academic point of view.

## Agricultural Assistance to Developing Countries

RAPID strides in the development of agricultural know-how in India during recent years has created a great demand in many of the developing countries. Such programmes which are particularly suited for tropical conditions have shown promise in the co-ordination research programmes on cereals, pulses, oil seeds and fruits.

Indian expertise has been made available to various developing countries through multilateral and bilateral programmes. The largest number of Indian agricultural experts have gone abroad under the FAO/UNDP programmes. There have also been cases of assignment under the Colombo Plan, Special Commonwealth Assistance Programme for Africa and Indian Programme of Technical and Economic Cooperation. According to latest available information Indian experts have been assigned to more than 62 countries throughout Asia, West Asia, Africa and Latin America and the number is over 325. The largest number of experts have been made available in the field of agricultural planning (Economic and Statistics) followed by agricultural research and livestock and development. Besides, tech-

nical training has been provided to merely 1000 foreign personnel in all fields of agriculture. They have gone to most of the agricultural universities and colleges, research institutes and the centres of the Union Ministry of Agriculture. India has also contributed in terms of seeds and printed technical literature. For instance 12 complete sets of agricultural implements for setting up mechanised farms were made available to Ethiopia. A set of agricultural implements and machinery was also supplied to Afghanistan under different programmes.

## Training at the Azad Farm Varsity

THE newly started Chandra Shekhar Azad University of Agriculture and Technology Kanpur has at the request of the Union Government prepared a detailed programme for training foreign agricultural scientists in the cultivation of rapeseed and mustard during the coming rabi season. The 15-day programme for the first batch of FAO trainees from Nepal will commence in November and the second batch from Bangla Desh will receive training during December.

The proposed training will be predominantly oriented from field and practical operations involved in the selection of hybridisation and varietal improvement in the three main mustard crops. Besides, the trainees will attend lectures in the subject and participate in the seminars and group discussions. The training will also include study of experiments in the field and in the laboratory in the disciplines of Agronomy, Entomology, Plant Pathology, Chemistry and Statistics. The trainees will be given an opportunity to visit the cultivators, field to attend field demonstrations in the neighbourhood of the campus.

The Institute of Agricultural Sciences, Kanpur has been known for its achievements in mustard breeding programme and has evolved and recommended a general cultivation and received outstanding recognition both in and outside the State.

## New use for Blue Green Algae

Dr. G.S. VENKATARAMAN, Head of the Department of Microbiology, Indian Agricultural Research Institute, New Delhi is planning to introduce blue green algae on a wide scale for enriching the rice fields with nitrogen.

The preliminary trials carried out in Punjab have shown that by employing blue green algae the dosage of nitrogenous fertilizers can be reduced by nearly one-third. The progressive farmers in Tamil Nadu have obtained good results in rice crops using this organism.

The three rice experimental stations at Tirukuppam, Aduthurai and Ambasamudram will be multiplied and these multiplication units will supply the material needed for trials in the farmers fields. Dr. Venkataraman has designed inexpensive methods by which even unsophisticated farmers can prepare the algae material for field use in open air troughs using sun light. The sun dried material can be mixed with fertiliser and scattered over standing water in the field. It can also be stored for future use. The use of algae for three or four consecutive seasons normally sustains the high yield in the subsequent years.

The value of blue green algae as a source of crop-nutrient has been discovered as early as in 1939 but its wide use was not possible as the method of propagation of this organism was not perfected until 1966. Now a new technique has been developed which can be adopted by the poorest farmer.

These organisms have been widely used for the cotton crop in Gujarat and tea plantations in Assam as well. The algae culture can be used for vegetable gardens as well. It has its application each in improving the output of gas in the gobar gasplant as it helps to overcome the inhibiting effect of low temperature during the cold winter season. Addition of two per cent of algae material gives a satisfactory output of gas.

## Library to be named after Randhawa

THE Academic Council of the Punjab Agricultural University at a recent meeting has decided that the University Library be named after the Vice-Chancellor, Dr. M. S. Randhawa and be called MOHINDER SINGH RANDHAWA LIBRARY. Dr. K. Kirpal Singh, Dean, Post-graduate Studies presided. The Academic Council also decided that in future, as a matter of general policy, the decisions to name buildings in the Campus to honour the scientists, administrators and writers will be taken by the Council.

The Punjab Agricultural University Library has developed out of only 200 books which was brought from Lyallpur in Pakistan in 1948. The present building was completed in June 1972 at a

cost of about Rs. 40 lakhs. It has seating accommodation for 700 readers i.e. 25 per cent of the University enrolment is so designed there is a distinct separation of talking and non-talking areas—the talking areas being all concentrated on the ground floor.

Two special features have been introduced by the Vice-Chancellor—(i) the hall of Fame where portraits of eminent scientists have been displayed along with the citations and (ii) the Museum of History of Agriculture showing on panels specially painted for the Library by Jaswant Singh. Artist the history of agriculture from pre-historic man to the green revolution. Besides more than 10,000 books, reports, journals and press cuttings have been presented to the Library by the Vice-Chancellor which are kept in a separate room, as the Dr. Randhawa Collection.

## Award for Research

Dr. G. S. SEKHON, a soil scientist of the Punjab Agricultural University has won the Potash Research Award of the Indian Society of Soil Science. The award carries a prize of Rs. 3,000.

Dr. Sekhon is the Head of the Department of Soils of the University.

## Mysore Varsity's Historic Decision

THE Mysore University recently gave a new lead to the Indian universities in taking a historic decision to allow those who have attained the age of 50 to take the highest examination of the university as a correspondence course, without insisting on the candidate's basic qualifications.

The Academic Council of the University, at its two-day sittings approved unanimously the resolution moved by the acting Vice-Chancellor, Mr. D. V. Urs, who was in the chair, for waiving the conditions of eligibility for admission to various courses of the Institute of Correspondence

Courses for candidates who have attained the age of 50.

Mr. Urs, to whose genius the scheme owes, said that the decision constituted a first step towards the fulfilment of the desire to have the "Open University System".

This decision enables even those who have studied upto the lower secondary stage, to take the highest examination of the university, provided he has attained the age of 50.

Justifying the Scheme, Mr. Urs said in a developing country like India it was essential that universities and educational institutions should meet the demands of the common man to make him fit in our socially and economically changing environment. He said foreign universities like the Simon Fraser University admitted candidates who had attained maturity to the degree courses irrespective of their previous qualifications and the State Secondary Education Board allowed candidates to appear directly for SSLC if they were above 18 years of age.

## PAU Contribution to Flood Relief

THE Academic Council of the Punjab Agricultural University today decided that all the staff working in the University will contribute one day's pay to the Punjab Chief Minister's Flood Relief Fund in aid of flood sufferers of Amritsar and Gurdaspur districts. The Vice-Chancellor, Dr. M. S. Randhawa presided. The total contribution will come to about 50 thousand rupees.

## Workshop on Grading System

DELHI University is planning to organise a workshop in October to be attended by the Vice-Chancellors of about 18 northern Indian universities to discuss the introduction of grading system in evaluation of examination papers. The University of Delhi is expected to introduce the grading system within the next two years. The Indian Institutes of Technology have already introduced the grading system.

The proposed conference would try to achieve a consensus on the introduction of the system so that there would be no clash between the various universities in the relative performance of its students. The system would try to eliminate the vagaries of the present marking system and reflect the students' performance with greater identity. The grading system is one facet of examination reform that has been debated in the academic circles for long time.

## World Bank Aid

Dr. L.S. NEGI, Vice-Chancellor Assam Agricultural University is keen to develop the campus into a full-fledged and magnificent institution to cater to the needs of north-eastern region. The State Government has already allotted Rs. 5 crores in the Fifth Five Year Plan besides the non-Plan annual allocation of Rs. 40-50 lakhs. The World Bank has also offered an assistance of Rs. 5.2 crores for

building up two sprawling campus complexes at Jorhat and Khana-para. The buildings are expected to be completed by December 31, 1978. The new campus complexes have been designed by a firm which had planned the site for the Jawaharlal Nehru University at New Delhi.

## Measures to facilitate Return of Scientists

THE Ministry of Industry and Civil Supplies, Government of India, has decided to provide a focal point where non-resident Indians who have expertise and foreign exchange can obtain various facilities for investments in India. The objective of the Government is to facilitate the return of Indian scientists, technologists and engineers working abroad and utilise their experiences and expertise in industrial and technical development.

The authorities which will act as focal points for removal of delays and other bottlenecks faced by non-resident Indians in establishing industrial undertakings under this scheme would be the Director-General, CSIR for assisting scientists and technologists returning from abroad for the purpose of setting up manufacturing capacities. Department of Electronics for those who propose to set up industrial undertakings for the manufacture of electronics items.

## Plea for Data Bank

PROF. A. R. KIDWAI, Chairman, UPSC, speaking at the graduation ceremony of the Bhabha Atomic Research Centre, pleaded for the setting up of a computerised data bank for specialists and discipline-oriented national merit examination for fresh graduates. This step is essential for the proper utilisation of India's large scientific and technical manpower. Prof. Kidwai said that increasing specialisation in all fields of knowledge and activity has made it imperative to identify and locate the most suitable persons for specific jobs. The data bank should contain valuable up-to-

date information on scientific and technical manpower in India and abroad and could help to eliminate time wastage in locating the right type of persons for development projects in all sectors of our economy.

Prof. Kidwai said that the discipline-oriented examination was also necessary to judge the achievements of university graduates on a national basis while setting national standards of achievement in different disciplines.

## Chancellor's Trophy

THE welcome innovation in Calcutta University sports would be the award of the Chancellor's trophy to the outstanding sportsman from next year. Mr. A.L. Dias, Governor of West Bengal and Chancellor of Calcutta University made this announcement during the presentation of colours at the Raj Bhavan recently.

## Sarabhai Awards

AT A function held to commemorate the birth anniversary of Dr. Vikram Sarabhai, the founder of the Physical Research Laboratory, Ahmedabad, five distinguished scientists were given the Sarabhai award for outstanding research work. The awards have been instituted by Shri Hari Om Ashram for outstanding work in the fields of electronics and telecommunications, planetary and space sciences, atmospheric physics and hydrology and system analysis and management. The award comprises a medal and a cash prize of Rs. 4000/- These are given from an Endowment of Rs. 2 lakhs to the PRL and are made on the recommendations of an expert national committee to scientists not above 45 years of age.

Dr. K.R. Ramanathan, eminent scientist, gave the awards this year to Dr. Satya Prakash (Physical Research Laboratory, Ahmedabad) in planetary and space sciences; Dr. S. Srikantan (Electronics Corporation of India) in electronics and telecommuni-

cations; Dr. R.N. Keshavamurthy (Meteorological Department) in atmospheric physics and hydrology and Dr. N. Sheshgiri (Electronics Commission) in management and systems analysis. Dr. S. Krishnan of the National Aeronautical Laboratory was given the award for electronic and telecommunications but was not present to receive it.

## Calcutta Computer Centre

THE Computer Centre of Calcutta University has undertaken the work of designing an educational micro-programmed mini computer and a special purpose computer for signal analysis. A scheme has been submitted to the Electronics Commission of the Government of India. The work is also in progress for the development system software for the existing IBM 1130 system computer now in the possession of the university.

Prof. S.N. Sen, Vice-Chancellor of the University, laid the foundation stone of the University Computer Centre Building at the College of Science at Acharya Prafull Chandra Road. The centre has been functioning since January 1972 and was located in the building of Radio Physics and Electronics in the campus of the University College of Science and Technology.

## U.G.C. Awards

THE University Grants Commission has selected 22 candidates for the award of research associateship with remunerations ranging from Rs. 700 to Rs. 1,100 per month.

The following have been awarded Rs. 1,100 : Dr. J. P. Sen (Jabalpur University); Dr. Bhaskara Rao (Bombay University); Dr. V. Srinivasan (Madras University); and Dr. K. Jayaram (Indian Institute of Science, Bangalore).

The following have been awarded Rs. 900 : Dr. Ehsanul Haq (Jawaharlal Nehru University); Dr. S. P. Dikshit (Jodhpur University); and Dr. Vinod

Krishna (Indian Institute of Science, Bangalore).

The following have been awarded Rs. 800 : Dr. Vasantha Pattabhi (Madras University) and Dr. V.G. Jadhav (Nagpur University).

The following have been awarded Rs. 700 : Dr. A. P. A. Kutty (Kerala University); Dr. (Mrs.) C. Gupta (Jadavpur University); Miss Asha Mohan (Punjab University); Dr. (Miss) Bharti P. Deshpande (Delhi University); Dr. (Mrs.) Promila Gupta (Allahabad University); Dr. V.G. Krishnamurthy (Jawaharlal Nehru Institute of Post-graduate Medical Education and Research, Pondicherry); Dr. K.S.S.S. Namboodripad (Kerala University); Mr. S.K. Gupta (Indian Institute of Science, Bangalore); Dr. Subha Rakshit (Calcutta University); Dr. S. Mehrotra (Delhi University); Dr. S.V. Bhide (Poona University); Dr. K. C. Patil (Indian Institute of Science, Bangalore); Dr. Harmeet Singh (Indian Institute of Science, Bangalore).

Sixty candidates have also been selected for the award of research fellowship in engineering and technology of the value of Rs. 500 per month during 1975-76.

### Increase in Admissions

THE total enrolment in educational institutions in the country reached the figure of 10 crores in the financial year 1974-75 according to the publication of Union Education Ministry. In 1972-73 it was 8.63 crores and during 1973-74 it was 8.92 crores. The ministry publication deals with trends, orientation and progress of education during the last three years. At the all India level the annual rate of increase in universities and colleges was 14.5% in 1968-69. It came down to 5% in 1972-73 and 3% in 1973-74.

The diminishing rate was however confined to the undergraduate level only. At the postgraduate level there was a constant increase approximately 11% during the period 1968-69 to 1974-75.

In the field of technical education there was no increase in the number of educational institu-

tions, it being, 141 at the degree level and 289 at the diploma level. The admissions to these institutions were restricted, regulated according to the needs. It stood in 1974-75 at 20500 at the degree level and 42000 at the diploma level against an annual intake capacity of 25000 and 47,500. However greater diversification of technical education to cater to the specialised manpower requirements of the country was undertaken by the Ministry. In the area of adult education, several programmes including non-formal education for the age group 15-25 and functional literacy scheme had been expanded during the last three years.

### Unified Campus for Singapore Varsity

THE University of Singapore was established in 1962 although it traces back its origin to 1905. But the university has been functioning all these years in makeshift arrangements at four places. In the year 1970, the development unit of the university was created to undertake the planning and development of its new campus. Prof. S.J. van Embden, an expert on campus planning was engaged as consultant under the UNDP Technical Assistance Programme. The professional staff was drawn from the Works Department, the Housing and Development Board and the university.

The re-allocation of the university from the existing sites to unified campus at Kent Ridge was undertaken as a part of the national development strategy to develop the university's capability of fulfilling its role in the training of high level technical, managerial and professional manpower needed to sustain the high economic growth rate of Singapore. It is planned to develop in three major phases : *Phase I* : Engineering, Science (Physics and Mathematics), Architecture and Building, Accountancy and Business Administration, Library, Administration, Maintenance, 3 Halls of Residence, Students' Union, Computer Centre and supporting facilities ; *Phase II* : Science (Chemistry,

Pharmacy), Biological Sciences, Arts and Social Sciences, Law and supporting facilities; and *Phase III* : Medical and Dental Faculties and a Teaching Hospital of 1040 beds ultimate capacity.

The facilities under phase I are scheduled to be occupied by the relevant faculties during the 1976-77 academic year. Faculties in phase 2 will move in the following year.

Over the past decade the pressures for admission to the universities in Singapore has been enormous due to better educational opportunities provided to children of school going age. This is particularly so with the University of Singapore whose graduates are in great demand by all sectors of the country's booming economy. In the year 1962-63, 2149 undergraduates were on the rolls while during 1972-73, the number rose to 4934. A total of 7515 undergraduates are planned to be accommodated on the campus during 1980. It is expected that by that time there would be 1820 students in engineering, 335 in architecture and building, 1350 in accountancy and business administration, 1200 in science, 1200 in Arts and Social Sciences, 600 in law, 700 in medicine, 225 in dentistry and 85 in pharmacy. The other institutions of higher learning in Singapore Nanyang University, Singapore Polytechnic, Ngee Ann Technical College, Institute of Education, Singapore Technical Institute—are facing similar development problems.

### Decentralisation of power at APAU Planned

Dr. C. KRISHNA RAO, Vice-Chancellor of Andhra Pradesh Agricultural University while addressing the members of the faculty, students and staff of the university, appealed to them to be prepared for hard work because the secret of prosperity of the country lies in increasing the agricultural production. He said that the past glories are not satisfying and are things of bygone days. One should plan for the future. The need of the hour during national emergency was

that every individual should apply the body and mind to the assignments they are charged with and to take things seriously. We have enormous manpower which should be channelised in a proper perspective with a direction and purpose as it is a matter of our survival.

The Vice-Chancellor advised the faculty to curb the 'parallel economy' by acting 'here and now'. The whole nation is to rise up as a single individual irrespective of the caste, creed and community. The dedicated hard work coupled with understanding, disciplined behaviour and national fervour have to be adopted and accepted as solutions to the problems of the day. Production in agriculture and industry needs to be increased at a faster pace as the agricultural scientists and the faculty has a greater responsibility in this direction.

The Vice-Chancellor announced his plans for decentralising the powers and authority for bringing a faster and efficient working of the university.

## Sardar's Centenary

THE Sardar Patel centenary year would be celebrated by the Gujarat University this year. Incidentally 1975 happens to be the silver jubilee year of the university as well. Sardar Patel was the President of the Gujarat University Trust which provided the nucleus for the formation of the Gujarat University. The university to commemorate the occasion would be setting up a reading centre near the university library for accommodating about 400 students. The Sardar Patel Vachan Griha will also be provided with cabins for research scholars. The building for the Griha is estimated to cost about Rs. 6 lakhs out of which Rs. 2.5 lakhs were donated by the family of late Shri Amratlal Hargovandas, a close friend of Sardar Patel. The remaining amount would be raised by public subscriptions.

A computer centre of the university was recently declared open

by the State Chief Minister, Shri Babubhai Patel. The building of the computer centre has been completed due to generous donation of Rs. 3 lakhs by the Rollwalla Enterprises.

The Gujarat University has also plans for the creation of an Institute of English and Foreign Languages. The University has already requested the University Grants Commission to give financial assistance for this purpose. Shri I.J. Patel, Vice-Chancellor of the university is very keen for opening an institute of foreign languages in this area.

Diploma courses in German and Russian languages have already been started. The teaching of Spanish has been undertaken by St. Xaviar's College, Ahmedabad, which is an affiliated college of the university. The classes in Japanese languages have also been started. The university has also instituted advanced courses for those who have successfully completed the elementary courses in foreign languages. The university hopes to make permanent arrangements for the teaching of these languages and few other popular languages and set up a language laboratory by the beginning of the academic year 1976-77.

## MCT Course

FOR SOME time there has been a growing demand to develop the necessary facilities for effective teaching in higher education. To familiarise the students with theoretical concepts related to the development and problems of higher education in India and abroad and to acquaint them with the current trends in instructions and evaluation, the University of Calicut has instituted a Master Degree course of College Teaching (MCT) from this academic year. The postgraduates in Arts, Science or Commerce Faculties and postgraduates in Education would be eligible to apply for this one year course. Both internal and external assessments would be laid during the course of instruction on Philosophical and

Sociological Bases of Education, Educational Psychology, Development and Problems of Higher Education in India in a comparative perspective, Curriculum, Teaching and Evaluation in Higher Education. The college teaching programme has been instituted for the first time by any Indian University so the development of the programme would be watched with interest elsewhere.

## Science Library to be Consolidated

THE reference library for scientific text books of Delhi University until now located in the university library and in its various departments may be consolidated at one place in a new science library proposed to be set up on the campus. This is one of the several improvements that the university is making to improve the educational facilities and concentrate its resources. It is expected that the approval of the University Grants Commission would be available soon. Their visiting committee has already been acquainted with the problem.

The proposed science library would offer specialist services in various subjects including the services of the staff who can cater to the needs of students and faculties. This would go a long way in reducing the pressure on space in the main library. Photostat facilities would also be added to the library in the extension of its functioning.

A central science laboratory is also being planned for the university where costly equipments used by different departments can be brought together. This step would help to avoid duplication and wastage of resources which results when several departments require the same equipment separately.

An electronic centre is also proposed to be established to fabricate, maintain and repair equipment used in various scientific departments. At present all

these jobs are done with outside help.

The Faculty of Mathematics is preparing a syllabi for the first course to be offered by the University in computer science. Meanwhile the IBM computer is to be provided with 1.5 lakh rupees worth voltage stabiliser to guard its delicate mechanism from fluctuations. The air-conditioning is also being strengthened. An infra-structure for the department of computer science is being created.

### Manchester's Offer

IT HAS been reported that the academic staff of the Control System Centre at Manchester University's Institute of Science and Technology are offering their expertise. Proposals have been invited from foreign governments and universities who are fully committed to university research and teaching and have respect for the professional engineers in the society. The package deal includes one professor, three senior lecturers and eight lecturers mainly involved in research into ways of controlling economic or physical systems.

### Summer Hill Campus for H.P. Varsity

HIMACHAL Pradesh University has constructed the Postgraduate boys student hostel at a cost of Rs. 24 lakhs. This has enabled the university to accommodate its postgraduates who were upto now housed in the rented rooms of the Indian Institute of Advanced Study. The hostel complexes are located on the Ridge surrounded by dense national forest and the accommodation is provided for 160 students. A similar unit of two blocks to accommodate 80 more students is already in an advanced stage of construction and is expected to be ready for occupation by the end of October. The other buildings constructed during the last two years involved an expenditure of Rs. 130 crores to the university.

### UGC Computer for Bombay Varsity

THE University Grants Commission has sanctioned the development of computer facilities for Bombay University. A sum of Rs. 30 lakhs will be given to the university to purchase a computer. Bombay has nearly 80 of the 260 computers in the country. The university researchers so far had to hire computer services elsewhere in the city for the calculation work. The UGC before sanctioning the amount had set up an internal expert committee to go over the question.

### Osmania University's decision

THE Osmania University has recently decided to allow students of Telangana Postgraduate centre to appear privately for M. Com. examination of the university from this academic year. The Telangana Postgraduate centre was started to augment the post-graduate studies in Commerce in Telangana region sometimes back.

### Andhra Pradesh Sets Up Telugu Institute

THE Andhra Pradesh Government has set up an International Telugu Institute to promote research in all aspects of Telugu language, its literature and allied fields. The UNESCO and the National Institution and Scholars would be associated with this organisation. An annual grant of Rs. 3 lakhs would be made available by the State government for this purpose. The Central Government and the UNESCO are likely to assist financially. The Institute would be located in the public Gardens, Hyderabad.

The Board of Governors, the Executive Committee and the Academic Council for the insti-

tute have been constituted by the government. The Education Minister, Mr. Krishna Rao, will be the Chairman of the Board of Governors, Executive Committee and the Academic Council and the Director of the Institute, Dr. P.S.R. Appa Rao, will be the Member-Secretary of these bodies.

The functions of the institute would be to undertake activities to achieve the objects of the institute particularly for providing academic environments and physical facilities for research in Telugu studies. The institute would also provide training facilities for scholars. It would promote and ensure intimate contacts among the specialists in India and abroad and coordinate dissemination of information in these fields. It would have close collaboration with the universities and other academic institutions and organisations. The institute is empowered to award professorships, fellowships, studentships, honorarium, remuneration and monetary assistance to promote research in Telugu studies.

In times to come the institute may also undertake to organise and facilitate study tours in India and abroad, conferences, symposia, seminars and summer institutes. A provision has been made for the publication of monographs, books, periodicals, journals and research papers.

The ex-officio members would be the Secretaries to the Government Departments of Education and Finance, Director of Higher Education, Vice-Chancellors of all the five State universities and the Presidents of the three academies. The other members of the Board of Governors would include a representative of the Government of India in the Ministry of Education and Cultural Affairs, a representative of the UNESCO and other distinguished literary persons. An individual institute donating a sum of Rs. 1 lakh or more would also become a member of the Board. The term of office of the nominated members would be three years but an outgoing member would be eligible for re-nomination.

## World Varsities meet in Moscow

THE Sixth General Conference of the International Association of Universities was held at Moscow from 19th to 25th August 1975. The week-long conference was attended by 430 heads of major universities and several hundred delegates from 80 countries. Dr. K. L. Shrimali, Vice-Chancellor, Banaras Hindu University, who is also a member of their Administrative Board, represented the Association of Indian Universities as well.

The main theme of the conference was Higher Education at the Approach of Twenty-First Century. The other topics discussed were : (i) Higher Education and Problems of Economic and Social Development; and (ii) Universities and Innovations within Higher Education. The Conference was hosted by the University of Moscow this year.

Professor M. Gaudry of the Montreal University was chosen President. Prof. Khoklov, Rector of the Moscow State University and Dr. K.L. Shrimali, Vice-Chancellor, Banaras Hindu University, were elected Vice-Presidents. Dr. Shrimah is the first Asian to be chosen to the post. He has also been re-elected to the Executive of the Association.

USA, Iran and Bulgaria have offered to host the next General Assembly.

## Advisory Council for Madras Varsity

DR. MALCOLM S. ADISE-SIAH Vice-Chancellor of Madras University pleaded for filling up a gap in the hierarchy of statutory bodies of the university. He intends to constitute an advisory council consisting of the heads of postgraduate teaching and research departments and representatives of research scho-

lars to help him in dealing with academic and administrative problems.

One senior member from each department would be on the council along with representatives of the research scholars.

The council would meet every month and discuss the problems of the departments and university by mutual exchange of views. The council would also ensure that the research work done in the departments was related to basic problems and community needs. The Vice-Chancellor would be placing before the Syndicate his policies and plans for the development of the university soon.

## Rural-Oriented Degrees

THE University Grants Commission has suggested restructuring of the courses in universities at the degree level to give them paractical and rural orientation. Restructuring should not only be of science subjects but also of social science courses.

All the new courses do not have to be professional or job-oriented courses. The important principle should be that of relevance to the environment and the needs and requirements of the region concerned.

The UGC has suggested, by way of illustration, the following subject combinations : (1) Mathematics, Physics and Electronics, applied Physics (workshop technology, machine shop practice instrumentation); (2) botany, chemistry and horticulture; (3) zoology, chemistry and fisheries; (4) zoology, chemistry and applied nutrition and public health; (5) biology, chemistry and nutrition/home science; (6) zoology, chemistry and dairy science.

For social science courses some of the following groups have been suggested : (1) Economics, commerce and agricultural marketing; (2) Economics, commerce and fair management; (3) political science, economics and community development; (4) political science, cultural anthropology/sociology of community life; (5) economics, com-

merce and rural banking; and (6) economics, commerce and rural industrialisation.

These combinations have been suggested for introduction at the under-graduate level in case the faculties think that considerable time will be taken to approve the courses, post-graduate diploma courses or short-term evening courses with these subject-groups may be opened.

The UGC has suggested that there should be close collaboration with the agricultural universities in the region in planning and running new courses.

Resources for the implementation of the scheme, the universities have been told, may have to be found by each university. The UGC will give assistance for purchase of equipment, setting up workshops and laboratories, appointments of essential staff on the merit of each proposal.

The UGC has mooted the idea of an implementation committee which will review the progress of the scheme and consider practical problems.

It has based its recommendations on the finding of the Education Commission (1964-65).

## Changes in Dramatics Courses

THE Faculty of Dramatics of Gujarat University recently introduced many changes in their syllabi. The study of play writing and acting for TV has been included as a separate course. The students will be encouraged to undertake a tour of the various centres in the country to witness plays produced by professional and university theatres.

It is proposing to hold a seminar on children theatre this year. The financial help from the University Grants Commission is being awaited. The faculty workshop will itself write and produce the plays. The 4-year old drama department of the university has already produced 31 one-act and 4 full-length plays. It has its own setting and lighting arrangement. The library of the department has

more than 1300 books. The Gujarat University has already bagged the first prize in make-up, costumes, acting and direction at the 1974 university drama competitions held at Kapurthala. The department has further suggested to the university authorities for setting up a training institute in TV on the lines of the Poona Film Institute.

## P.M. Releases Journal of Higher Education

**PRIME MINISTER** Indira Gandhi released the first issue of Journal of Higher Education published by the University Grants Commission in New Delhi. Addressing a representative gathering of educationists and officials of the Commission, Smt. Gandhi warned against the danger of our unconsciously adopting westernised attitudes and looking at everything from a western angle. Higher Education in India should therefore not only instill modern and rational outlook in youth but should remain Indian to the core. It should equip the Indian youth to face

the challenges of a rapidly changing world. She said education should adopt itself to changes in society.

The Prime Minister said students wanted university education because they believed that vocational training might not help them to equip for the future. But some type of vocational education was necessary for them.

Prof. Sarish Chandra, Vice-Chairman of the University Grants Commission while welcoming the Prime Minister assured her that the teaching community would strive to ensure that the education system become a fit instrument for training scientists, researchers and teachers of the highest calibre. A sense of discipline and national purpose would be developed among the youth.

The UGC journal would be issued three times a year along with a bulletin. Apart from disseminating information regarding various programmes of the Commission the journal would help in the development of right values in the academic community.

districts of Jhansi, Jalaun, Rohtak, Hamirpur and Lalitpur. At present there are 13 degree colleges in the area and they will now be associated with this university. Dr. Wahid U. Malik, Professor of Chemistry at Roorkee University has been appointed the first Vice-Chancellor of the University. This is the eighteenth university of Uttar Pradesh.

## Medical Grants Commission

**DR. B. N. SINHA**, President, Indian Medical Council, while inaugurating a three-day Workshop and Teaching Session in connection with the Ninth Sectional Conference of Urologists of the Association of Surgeons of India said in Madras that the Union Ministry of Health is contemplating to set up a Medical Grants Commission. While the Government formed such a Commission, the Indian Medical Council would be the authority to decide the allocation of the aid to the various institutions in need or where the funds had to go.

The undergraduate medical education would also be reorganised keeping in view the need of the community. A scheme is drawn up for sending medicos to various hospitals and primary health centres from where they would give domiciliary treatment to people in distant villages. They would also participate in the various programmes of eradication of leprosy, tuberculosis and smallpox. In this connection Dr. Sinha cited the example of Madurai Medical College where the hospital staff organised special training programmes in villages which ensures better health and nutrition in their own environments and food habits. The Indian Medical Council is studying this scheme of nutrition for possible adaption by other states.

With regard to the migration of Indian doctors in large numbers to foreign countries he said the students were lured by foreign degrees.

## Rice harvesting Camps

THE students of Guru Nanak University from five affiliated colleges will soon be having a rice harvesting camp. The teacher incharge of youth welfare activities in these colleges had a meeting on the campus. The Director, Youth Welfare, Punjab also attended the meeting.

This is the first attempt in associaty the students of the university and colleges with the farmers during harvesting season in a organised way. During the camp, arrangements would be made for indoor games, youth festival and entertainments for rural community. The students participating in this programme will come from Government College, Sathiala, Guru Nanak College, Batala, S.L. Bawa DAV College for Boys, Batala, Government College, Kala Afghana and Goverment College, Ajnala. They would also collect money for flood relief.

## New University Proposed

THERE are plans to open a University in Pondicherry during the Fifth Plan. Likewise more universities are to come up in West Bengal, Union Territory of Goa, Daman, Diu, Jammu and Kashmir, Madhya Pradesh and Andhra Pradesh during the fifth plan period. There is also a proposal to start Medical University in Karnataka. Besides, universities are also proposed to be established in Mangalore and Gulbarga subject to clearance from the University Grants Commission.

## Jhansi has a University

THE Government of Uttar Pradesh has established the University of Bundelkhand at Jhansi with effect from August 26, 1975, according to the notification issued in the State Gazette.

The Bundelkhand University will have jurisdiction over the

# Correspondence Courses in Teaching of English

The Central Institute of English and Foreign Languages runs a correspondence course leading to a post-graduate certificate in the teaching of English. The duration of the course is one year. Instruction is offered in the following 5 subjects:

- Phonetics and spoken English
- Methods and Materials
- Introduction to Linguistics
- Modern English Grammar and Usage
- Interpretation of Literature and Advanced Rhetoric

## Method of Instruction

In each subject there are 20 lessons. These are carefully prepared by the Faculty members of CIEFL. At the end of each lesson in each subject there are assignments: the participants have to work them out and send the answers to the Institute. Only on receipt of the answer scripts pertaining to a particular lesson will the participants be sent the next lesson. Thus insistence on assignments serves two important purposes:

- (a) It makes the participants go through the lessons carefully and understand them, and
- (b) It gives the Faculty members of the Institute the much-needed feedback.

## Revision of Lessons

The lessons are revised periodically on the basis of the answers sent to the institute by the participants following the Course. Also, the lessons are circulated among the Faculty members of the Institute for a careful perusal and comments. A member of the Faculty other than the one(s) who prepared the lessons is given a complete set of lessons. This reviewer goes through the lesson critically and passes on his comments to the department. These are passed on to the writer of the lesson. Another factor that contributes to this revision is the participants' own comments and criticisms. A very detailed ques-

tionnaire is given to every participant who has completed the course and the answers given by them are carefully studied and their suggestions, wherever feasible, are incorporated into the lessons when they are revised. Also, from time to time, they write to the participants, asking for comments and suggestions, even when they are following the course.

## Evaluation of answer scripts

The answer scripts sent by the participants are assessed carefully by the Faculty of the Institute. As far as possible the writer of the lessons himself/herself assesses the answer scripts as this method has the advantage of the writer of the lesson getting a first hand feedback. The answer scripts are graded on a 12 point scale ranging from A+ to C—(A+ meaning "Excellent" and C—meaning "average"). The grades awarded account for 40% of the total marks in the final examination. The participants are informed in advance about this system in order to ensure that they do the assignments systematically and with care. Where an answer is inadequate or off the point, the participant is asked to rewrite it.

## Contact Programme

At the end of the course, that is, when a participant has completed all the 20 lessons in each subject, a Contact Programme is organised by the Institute at various centres in the country. This is of three weeks' duration. During the contact programme, the participants are given intensive training in phonetics and spoken English and in the methods of teaching a foreign language. They are exposed to real-life classroom situations. After a few demonstration lessons given by expert staff of CIEFL the participants are given a chance to teach, thereby giving them an opportunity to put into practice, under

supervision, the theoretical knowledge they have acquired by going through the lessons. In addition, the participants are given some instruction in Linguistics and Grammar as well. Faculty members of CIEFL are deputed to outstation centres. The three-week contact programme is immediately followed by the final examination.

## Courses completed so far

The first correspondence course was started in March 1973. 189 participants from all over India enrolled themselves.

Of these 46 discontinued. Of the remaining, 143 completed the Course and took the examination. All but one passed. The others who did not complete the course till May 1975 were informed that their names were being removed from the Rolls since, according to the Institute rules, a teacher who enrols himself to do the correspondence course will have to complete the Course and take the final examination within 2 years of enrolment. (The participants are aware of this rule.)

The second course which started in September 1974 had 236 on the rolls. Of these, 50 discontinued and the remaining 186 completed the Course and appeared for the examination. All but three passed. The others have been removed from the Rolls. A few who had genuine difficulties at the time of the examination have been given another chance to appear for the examination.

The third course which started in March 1974 had 165 on the rolls. Of these 42 discontinued and of the remaining 123, 42 took the examination in May-June 1975. All have passed. The remaining 81 are expected to take the examination in May 1976.

The IV Course which started in March 1975 has 176 on the rolls. These are expected to take the examination in May 1976.

The three contact programmes which have so far been organized were at Chandigarh, Hyderabad and Madras. At Chandigarh the help of the Director was sought and members of staff of the

Regional Institute of English who helped CIEFL faculty members who were deputed there for the purpose. At Madras the staff of the British Council lent their support and all the three sessions were an overwhelming success. The correspondence course participants who attended these sessions were unanimous in their opinion that the course in general and the contact programme in particular helped them improve their professional competence.

*The UGC gives the teachers who attend the practical training/ final examination session financial assistance towards their T.A./D.A.*

#### Mid-session contact programme

The teachers who follow the course seem to feel that a contact programme during the middle of the course will be tremendous help to them. This is being examined now and some decision is expected to be taken soon.

#### Place of the CC in the ELT situation today

There is a genuine and keen awareness on the part of many English teachers in our country today that the foreign-language-teaching-technique should change for the better and the old method of teaching is being slowly replaced by better and more efficient methods. Needless to say teachers need to be trained to do their jobs effectively and CIEFL has been doing this by organising a one year Diploma course. Many teachers who want to do the course find it difficult to do so owing to domestic, financial and allied problems and the correspondence course has come as a boon to them. The steady increase in the attendance of participant at the Contact Programme sessions (45 in May 1974, 58 in December 1974 and 125 in May 1975) proves the genuine interest teachers have in improving their professional competence. It is expected that more and more teachers will avail themselves of this opportunity and become better teachers of English. For details regarding the next Course please write to the Registrar, Central Institute of English and Foreign Languages, Hyderabad-500-007.

### W. Bengal VCs Conference

A TWO-DAY conference of the Vice-Chancellors of the State universities was held in Calcutta at Raj Bhavan. Besides the Chief Minister, the Education and Finance Ministers also attended the conference. Various items were discussed but the following decisions have special significance :

- (i) Admissions to colleges and universities be made strictly on merit on the basis of marks obtained by students in their qualifying examinations.
- (ii) Strict measures be taken to enforce order and discipline in the campuses. The menace of mass copying and manipulation of admissions to colleges and universities through student unions be curbed. The State authorities assured the Vice-Chancellors of the Government support for enforcing discipline on the campus. The Chief Minister however suggested that the genuine grievances of the students should be seriously looked into. The universities may for this purpose create the post of Dean of Student Welfare.
- (iii) A code of conduct for teachers of universities and colleges regarding full utilisation of academic terms for teaching, completion of courses and their performance in general be drawn up by the Vice-Chancellors.
- (iv) A service Commission for the selection and recruitment of teachers in affiliated colleges and universities be set up. The proposal was not, however acceptable to some universities. It was therefore suggested that the Commission may see the cases pertaining to affiliated colleges but the Government should not infringe upon the autonomy of the univer-

sities in the matter of selection, recruitment and regulation of service conditions of university teachers.

- (v) In the matter of admissions into colleges and universities the educationally backward communities should enjoy certain privileges. Meritorious students and those with proficiency in sports and games should be given special consideration.

### 2400 Villages Covered by SITE

FOR the first time, SITE is demonstrating that relatively inexpensive receivers can be used to bring television programmes oriented towards development, health and environment to remote villages in India. At the moment, the experiment covers only 2400 villages with as many community receivers including some battery operated—in six states of Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Orissa and Rajasthan. However, the Indian authorities hope that successful execution of the current programme may lead to a wider and varied fare to cover all the 600,000 villages in India in the next few years.

Prof. Dhawan of the Indian Space Research Organization told reporters that the Government had earmarked nine crores of rupees—a little over 11 million US dollars—for SITE, exclusive of contribution of ATS-6 satellite. While India uses the satellite, for a few hours for development and education in rural areas and for study of clouds and other atmospheric conditions, United States uses it for other experiments the rest of the time.

In all, there are only four hours broadcasts daily through satellite—90 minutes in the morning devoted to primary school education and 150 minutes in the evening for teaching rural population about modern agricultural techniques, family planning, health and environment.

## Readers Write...

### Exam. System in Indian Universities

Sir,—I have the honour to invite your reference to the item : "EXAM SYSTEM IN INDIAN VARSITIES" (University News August 1975) where in the news of the introduction of the examination reform plan in 12 Indian Universities has been given. It is needless to emphasize the desirability of the introduction of the "Internal Assessment" and the "Grade System" for assessing the performance of students throughout the year of study in preference to the existing practice of the end-of-the-course tests. The U.G.C. plan should be expected to work quite satisfactorily with the various safeguards suggested to prevent any misuse, overestimation or undergrading of the students during the assessment of the students' performance according to this new scheme.

In this regard, however, I may

further suggest that under the new method, the grading of a student should be "open" and not "confidential" so that each student is aware of the grade awarded to him from time to time. This will impress upon him the need to better his performance in the subsequent tests or to improve upon his achievement. Further, this measure will, in my view, convince all the students concerned that none of them has been singled out for either over-estimation or undergrading. This I hope, will minimize the misuse or the "personal favour or prejudice" factor during the internal assessment or the idiosyncrasies of the assessors implementing this plan. Such a measure will also enable both the teachers and students to understand the philosophy behind this new concept of assessment whereby it will be clear to all concerned that each one of the students has been graded on his merit.

—J. Narayan Rao

over all the colleges by one university headquarters and consequently it signalled a drop in the standards. The Union Education Ministry, in its report, has brought out that the craze for university education has been on the decline inasmuch as college enrolment that was 14½ per cent in 1968-69 touched 3 per cent in 1973. This factor should be studied in all seriousness, being a national problem and not confined to a few universities alone.

Dr Malcolm Adiseshiah, the new Vice-Chancellor of the Madras University, whose appointment is widely welcomed to-day, has thrown light on this burning problem in his first address made when he set his face against the multiplicity of colleges without regard to the qualitative results which he considered vital for the healthy growth of universities. They were words of wisdom as they came from a great educationist of international repute. And it is unimaginable that the immediate past Vice-Chancellor of the Madras University should have permitted those who had passed with a 'C Plus' (those who got less than 50 per cent marks) to be appointed Assistant Professors and the Government of Tamil Nadu should have agreed to this ! What would be the quality if one who does not know the subject fully begins to teach his students in college, and what respect would he command from the student community? This is the crux of the problem and the universities should try to solve them by taking the correct stance whatever be the political pressure and incidentally safeguarding the autonomy of the universities and their academic freedom. Let it not be forgotten that higher university education, being an expensive experiment both at the graduate and post graduate levels, the compulsion should be to recognise the merited scholars by which alone the quality and standard of the university will be upheld, promoted and maintained as it is being done in most of the universities of the western coun-

### Decline in Standards in Universities

Sir,—The Union Education Minister's statement in the Rajya Sabha on August 5 that in view of the slow implementation of the educational reforms, the Union Government will have to examine the constitutional position as to how best they could enlarge the University Grants Commission's powers and take a decision at the highest level by the Prime Minister and the State Chief Ministers in order to make education a concurrent subject, is very significant from the point of view of the general educational pattern in our country. Where a hundred million children get instruction in schools in our country, it cannot be treated lightly that it is the concern of the respective States only. Education is the backbone of the nation and no progress can be full and complete if there is

no basic national approach both for the school and university education. Parochial and isolationist approach in imparting education will do harm to the teeming school-going population and the entire scheme and set-up should be thought of and planned with an accent on national consciousness.

In India the universities have maintained a fair standard so far but by no means can it be said that all the universities have come up to international recognition. An analysis would reveal that with the exception of some universities like Delhi, Bombay and Calcutta, most of the universities have shown a decline in standards. The universities have been burdened with numerous colleges that it was found impracticable to exercise full administrative control

tries, in the Soviet Union and Japan.

Various State Ministries, with an eye on vote-catching, vied with one another in starting, innumerable arts colleges in taluk centres without due regard to the quality of university education. This is a dangerous trend and unless the collegiate education is made purposeful and productive of quality, the foundation of university education would crumble. To secure collegiate education is not a fundamental right of everyone and to make it free for all or for the bulk of the community would make it valueless. It is here that the University Grants Commission's powers should be enlarged so as to prevent the growth of mushroom colleges and insist on quality in university education, as rightly observed by the Union Education Minister.

The future of our country is in the hands of the youth. The educated youth, whether they com-

plete school or collegiate education, have a vital role to play in national reconstruction. In no country is there such a decentralised educational system as it is in India to-day. Education is the most potent force of national integration. And yet in our country, educational planning and approach have not been done with a national perspective. The time is ripe, internal Emergency being in force, for such a step to be taken and if done, it would be one in the right direction. It is now left to the Prime Minister to convince the State Chief Ministers and make the constitutional change to include education in the Concurrent list which would enable the government and the universities to work up a national pattern with the sole object of commissioning the educated youth of our country to be fully involved in national service.

—R. T. Parthasarathy.

## Medical Education

Sir.—The problems of medical education, medical care and role of specialisation are of topical interest amongst medical men and the public. The suggestion is that professional teaching and training in medicine are to be adjusted "to changing social and contemporary conditions prevailing in an area in public interest".

Contemporary conditions in our country are population explosion, extreme poverty, insanitary living conditions, inadequate health infrastructure, inadequate hospital facilities and ancillary services, reluctance of urban-trained doctors and people to stay or work in villages. Better communication facilities with the developed nations have disseminated modern methods of medical service amongst many of our people who quite naturally demand adequate preventive and therapeutic medical care. This causes an expectation gap.

Teaching hospitals at present are overcrowded with more or less the same types of emergency cases—chronic and complicated cases suitable for clinical demon-

stration are rarely admitted. Lack of specialist units in most teaching institutions lead to a poor standard of treatment and teaching with the result that the standard of our graduates are lowered with derecognition of our degrees.

May I suggest as a remedy rationalisation and re-structuring of undergraduate medical curriculum where specialist units like orthopaedics, paediatrics, dermatology, chest diseases, etc., should be given due recognition with full status and representation in Faculties and Medical College? This should not cause discord in educational programme but on the contrary will produce a good "basic doctor" so necessary in our changed social conditions. Specialisation per se must not be condemned as it would mean halting scientific pursuits. It has come to stay.

A cost-benefit system in medical training as in modern business management is recommended as delegation of specific work to respective specialities will ensure better performance and efficiency.

—K.S. Bose

## Science Awards

THE Indian National Science Academy instituted, in 1974, the award of Science Academy Medals for Young Scientists, to give recognition to the scientific achievements of young scientists below the age of 30, in any branch of science and technology within the purview of the Academy. The award carries a medal and a grant of Rs. 5,000 towards support for research including travel. The research grant is being provided by the Kothari Scientific and Research Institute, Calcutta.

The following awards were announced by the Council of the Academy in their meeting held on 1-2. August, 1975 : (1) Dr. N.C. Bhattacharya, Research Associate, Deptt. of Botany, Panjab University; (2) Dr. K.S. Dhindsa, Director (SC & P), Haryana Agricultural University; (3) Dr. A.A. Hagroo, Deptt. of Medicine, Maulana Azad Medical College, New Delhi; (4) Shri S.K. Kataria, Scientific Officer, Nuclear Division, Bhabha Atomic Research Centre; (5) Dr. A.S. Khalatkar, Lecturer, Deptt. of Botany, Nagpur University; (6) Shri Naresh Kochhar, Deptt. of Geology, Panjab University; (7) Dr. S. Krishnaswami, Fellow, Physical Research Laboratory, Ahmedabad; (8) Dr. S.C. Lakhota Lecturer, Deptt. of Zoology, University School of Sciences, Gujarat University; (9) Dr M.L. Munjal, Assistant Professor, Deptt. of Mechanical Engg., Indian Institute of Science, Bangalore; (10) Dr. J. Lakshmana Rao, Deptt. of Physics, Sri Venkateswara University; (11) Dr. (Mrs) Manju Ray, Senior Research Fellow, Deptt. of Pharmacy, Jadavpur University; (12) Shri Shamsuddin, Lecturer, Deptt. of Metallurgical Engg., Banaras Hindu University.

The presentation of the medals to the recipients will be made at the time of the Anniversary General Meeting of the Academy to be held during the 63rd Session of the Indian Science Congress at Waltair in January 1976.

**(Continued from Page 8)**

resources on carrying out clearly defined tasks it should be possible to increase considerably the effectiveness of the young universities.

The priority objectives for development vary from one institution to another and depend on particular situations, but in all cases special attention must be devoted to the establishment of libraries. A university cannot exist without a good library. And by tradition, a university library should also be the main scholarly and scientific library for all neighbouring institutions of higher education.

Some of the new universities were able to take over quite good collections of books, but the completely new universities are in a more difficult position. In practical terms, a solution can be found with the help of the leading universities and by concentrating in the university libraries scientific and scholarly literature from various local collections.

It is also important for attention to be directed to faculty laboratories in the fundamental disciplines and to the equipment of frequently used auditoria with modern technical facilities.

Another matter of extreme importance is the establishment within the university of those institutions which are concerned with the collection of material, the selection and analysis of which is

very time-consuming; i.e., historical, biological and other museums. At present, work of this kind is only being carried out in Donetsk and Simferopol. Nor must the establishment of botanical gardens be delayed.

The task of dealing with all these matters is complicated by the fact that the rapid development of the new universities presupposes a rapid increase in the number of students and a consequent increase in demands for premises and equipment.

The development of the teaching and research activities of the new universities is posing entirely new problems, among them some which are also confronting all institutions of higher education—such as those related to the qualitative improvement of the teaching and learning process, in connection with the transfer to new programmes of study in the 1974-75 academic year: the further development of research particularly in the fundamental sciences: the organization of the improvement of the qualifications of specialists needed by the national economy; the extension of assistance to other institutions of higher education in raising the level of their teaching, etc., etc.

It is not yet within the power of many new universities to deal with all these problems, but the difficulties of the early years are being surmounted. □

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## CLASSIFIED ADVERTISEMENTS

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### INDIAN INSTITUTE OF TECHNOLOGY KANPUR I.I.T. Post Office, Kanpur

#### ADVERTISEMENT NO. 26/75

IIT Kanpur is one of the five institutions of national importance set up by the Government of India in 1960. It has about 1200 undergraduates and 800 Post-graduates on its rolls. Undergraduate Programme offers training in six different fields of engineering and Post-graduate Programme prepares for a higher degree in these engineering subjects as also research programme leading to Ph. D. degree in engineering, sciences and humanities. It is located on a self developed campus having community facilities like primary and secondary schools, a Health Centre, shopping Centre with a bank, post office etc.

The Institute is looking for a person of wide experience for the post of Registrar for the Institute:

**Job description : Secretary to the Board of Governors and the Senate : overall**

responsibility of the office related to the administration of the Institute including recruitment, promotion and discipline of the staff

#### Qualifications and Experience

(i) Essential—(i) a University degree (ii) minimum 10 years of experience in a responsible supervisory administrative position in a Government educational or research Institute Commercial houses of national standing.

(ii) Desirable—Postgraduate degree or diploma in public Administration or Management.

**Pay Scale—Rs. 1500-60-1800**

**Age—upto about 50 years.**

The post carries allowances according to Institute rules which at present correspond to those admissible to Central Government employees stationed at Kanpur. Higher initial pay is admissible to a highly qualified and experienced person. The Selection Committee may relax any of the above requirements for the post in an exceptional case.

Appointment will be on contract bases initially for a period of 5 years.

Deputation on foreign service terms will be acceptable. The incumbent will be entitled to join the Institute's Provident Fund as applicable and other benefits such as housing, medical care etc. as admissible to other regular employees of the Institute.

Other things being equal, preference will be given to Scheduled Caste/Scheduled Tribes candidates.

Applications should be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed un-stamped envelope of 25 cm. x 10 cm. size. Names of three persons who are fully acquainted with the professional experience and character and nature of the applicant may be given so that a reference could be made. Applications accompanied by a postal order for Rs. 7.50 (Rs. 1.87 for SC/ST candidates) should reach Registrar, Indian Institute of Technology Kanpur, IIT Post Office, Kanpur—208016 not later than October 18, 1975

**Note : Those who applied in response to Advt. No. 20/75 need not apply again.**

## LUCKNOW UNIVERSITY

Advertisement No. 7/1975

APPLICATIONS are invited for the following posts of Lecturers in the grade of Rs. 700-40-1100-50-1600 :—

1. One Lecturer in German
2. One Lecturer in Chinese
3. Two Lecturers in Philosophy
4. One Lecturer in Russian
5. Three Lecturers in Education
6. Four Lecturers in Political Science
7. Two Lecturers in Public Administration
8. Two Lecturers in Urdu
9. One Lecturer in Persian
10. One Lecturer in Sanskrit
11. One Lecturer in Oriental Studies in Sanskrit
12. One temporary Lecturer in Military Science
13. One Lecturer in Psychology
14. One Lecturer in Medieval and Modern Indian History
15. One Lecturer in English
16. Five permanent and one temporary Lecturer in Ancient Indian History & Archaeology
17. One Lecturer in Chemistry
18. Two temporary Junior Associate Lecturers in the Department of Bio-Chemistry
19. Seven Lecturers in Botany
20. One permanent and one temporary Lecturer in Geology
21. One Lecturer in Mathematics
22. Two Lecturers in Statistics
23. Two Lecturers in Business Administration (Faculty of Commerce)

### Qualifications :

**Essential**—Doctorate in the subject of study concerned or a published work of a high standard in that subject, and consistently good academic record with first class or high second class (B+) Master's Degree in the subject concerned or an equivalent degree of a foreign University in such subject

### General :

For purposes of qualifications required for the above posts the Degrees obtained in a subject taught in a Department, which is subsequently constituted into separate Departments, shall be deemed to be Degrees in the subject concerned for the newly constituted Departments.

Relaxation in the prescribed qualifications may be made in exceptional circumstances in accordance with the Statutes. Ability to teach under-graduate classes for all posts through the medium of Hindi essential except for the posts in languages.

Benefits of Provident Fund available as admissible under the rules on confirmation for permanent posts. Period of probation for permanent posts is one year. It is not necessary to fill all/any of the advertised posts

Applications on the prescribed form (available on request, accompanied with a self-addressed envelope of size 23 cm x 10 cm, free of cost from the office of the

Registrar) with recent testimonials, publications etc. should reach the Registrar, Lucknow University by Tuesday, September 23, 1975. The candidates, who are in service must send their applications through the proper channel. Application Forms to outstation candidates will be issued by post upto Tuesday, September 16, 1975.

## PUNJABI UNIVERSITY PATIALA

### ADVERTISEMENT No. 57/FST/S.P.S./75

Applications are invited for the following posts :—

#### Dean of Students (Rs. 1100-50-1300—EB—60-1600)

At least a second class Master's degree from any recognised University in India or an equivalent qualification from a foreign University with atleast ten years' teaching experience as Professor Reader Head of the Department in a College University and at least ten years' experience in an highly responsible administrative position in a University Educational Institution. Candidates with Ph.D. degree would be preferred. Should be conversant with the problems programmes of the student community and should have sufficient knowledge of organising/guiding different fields of students' activities. Persons understanding students psychology will be given preference. The appointment will be for a term of three years.

### General

The Selection Committee might relax the qualifications and experience in the case of candidate of exceptional merit. Higher start within the grade admissible depending upon the ability and experience of the candidate

House rent and Dearness allowance, Provident Fund and Medical facilities according to University rules

Applications complete in all respects on the prescribed form accompanied by a crossed postal order worth Rs 5/- (Rs 2/- for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala, should reach the University by 12-9-75. The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size of 23 x 10 cms stamped with 25 paise postage.

Persons already in service should apply through proper channel. Government servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by 16-9-75.

Gurpartap Singh  
REGISTRAR

## CENTRE OF ADVANCED STUDY IN ASTRONOMY, OSMANIA UNIVERSITY HYDERABAD-500 007

### SENIOR AND JUNIOR RESEARCH FELLOWSHIPS

Applications are invited for the following fellowships so as to reach the undersigned on or before 15th September, 1975

1. Senior Research Fellowships : (4)  
**Qualifications**—Either Ph. D. in Astronomy or Ph. D. in Physics or Mathematics with a thesis having some bearing on a problem in any branch of ASTRONOMY AND ASTROPHYSICS. Candidates who have submitted thesis for the Ph. D. Degree will also be considered

**Age**—Not above 35 years

2. Junior Research Fellowships : (4)

**Qualifications**—At least a second class Master's Degree in Astronomy or in Physics M. Sc's in Physics must have basic knowledge of Astronomy. Candidates will have to register for Ph. D. in Astronomy, if selected

The value of Senior Research fellowship is Rs. 600/- per month with a Contingency Grant of Rs. 2,000/- per annum

The value of Junior Research fellowship is Rs. 400/- per month for the first 2 years and Rs. 500/- per month for subsequent 2 years after the work has been assessed and found satisfactory with a Contingency Grant of Rs. 1,500/- per annum

**Note**—Two (2) Junior Research Fellowships are reserved for the M.Sc's Osmania University and two (2) for the candidates from other Universities

The applications should be typed on plain paper giving the following information. (a) Name and address, (b) Date of birth, (c) Qualifications (with certificates, marks memoranda, etc.) (d) Research experience, (e) Papers published, if any, (f) Names of two references (g) List of books on Astronomy and Astrophysics read by the candidate, (h) in the case of Senior Research fellowship a brief summary of the thesis and the proposed plan of research should also be given.

The candidates may have to appear for an interview at their own cost.

Sd/-  
DIRECTOR

# THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities

## PHYSICAL SCIENCES

### Mathematics

1. Dass, Bal Kishan. On error-correction capabilities of burst codes with weight constraints. University of Delhi.
2. Kapur, Vijay Kumar. Analytical studies of some problems in thermodynamics. Kanpur University.
3. Saini, Jagdish Chand. Hydrodynamic and hydro-magnetic stability of Couette flow. Meerut University.

### Physics

1. Ansari, Wazirul Haque. A semi empirical all-valence electrons SCF-LCAD-MC-CI : Study of electronic spectra of simple organic molecules. Magadh University.
2. Barhai, P.K. Nuclear matter properties with density dependent effective interactions. Dibrugarh University.
3. Bhogra, Ramesh Kumar. Image evaluation for aerial photographic and microscopic systems. I.I.T., Delhi.
4. Gupta, Hari Narain. Role of second neighbour and three-body forces in the dynamical properties of heavy mono-valent metal halides. Meerut University.
5. Gupta, Sushma. Studies in the statistical properties of photoelectron counting. I.I.T., Delhi.
6. Jain, S.C. Luminescence properties of triple activated (Ce, Sm, Mn) CdS phosphorous. Bhopal University.
7. Maru, Maulesh Prataprai. The scattering of slow electrons by polar molecules. M.S. University of Baroda.
8. Satyanandam, Gutina. Nuclear quadrapole interactions in ionic solids. Andhra University.
9. Sneh. Lattice dynamics : Thermal properties of solids. Meerut University.
10. Teli, Motilal Totaram. Elliptic relations between degrees of polarization of scattered particles and neutrino-nucleon scattering. University of Poona.

### Chemistry

1. Bhagwat, Vasanti Madhav. Studies on organophosphorus insecticides. University of Poona.
2. Bhatwadekar, Sharadchandra Vinayak. Terpenoids. University of Poona.
3. Dhawan, Ranjana. Some aspects of electrochemical behaviour and transport properties in molten calcium nitrate tetrahydrate-sodium nitrate mixtures. University of Delhi.
4. Gon, Ajoy Kumar. Redox processes in solution with special reference to peroxodisulphate. University of Jabaipur.
5. Joshi, J.S. Studies in corrosion and corrosion inhibition. Gujarat University.
6. Kamleshwara Rao, Vyakaranam. Novel Ligman's from *Gmelina arborea* (Linn.) and new synthesis of phenyl naphthalenes of natural origin. Andhra University.
7. Kapur, Swaroop Lata. Chemical studies in human and experimental burn. Kanpur University.
8. Maharaj, A.S. Basic amides, thiazolidine and thiazoline. Gujarat University.
9. Majumdar, Gori. Study of the complexing properties of transition metals with diphenyl-p,p'-bis (1-tetrazolin-5-thione). Kanpur University.
10. Mehra, Mohan Krishan. Studies in the electrophoretic separation of metals. Indore University.
11. Ora, D.H. Studies on formation and prevention of scales. Saurashtra University.
12. Patel, Virnala Shanabhai. Stereochemical studies in flavonoids. University of Poona.
13. Patil, Sambhaji Parasharam. Studies of some selected elements by liquid-liquid extraction. Shivaji University.
14. Saraswathi, G.N. Studies in terpenoids : A contribution to the understanding of the chemistry of carvestrene, disylvestrene, dicarvelones and bis-nitrosocarone. University of Madras.
15. Shah, R.R. Studies in corrosion inhibitory. Gujarat University.
16. Shethola, Om Varma. Studies in metal complexes of cyanoacetyl derivatives. Jiwaji University.
17. Shukla, Ram Krishan. Studies on the chemical

composition and nutritive value of some Indian green leafy vegetables. Kanpur University.

### Earth Sciences

1. Patnaik, J.K. The studies of winter monsoon over India. Andhra University.
2. Shah, Ochhaval Krishnalal. Geology of the area around Bhimtal (Dist Nainital) with special reference to its structure and stratigraphy. M.S. University of Baroda.
3. Soman, Ganesh Ramchandra. Geology of the Tota Am area, Almora and Nainital Districts, Uttar Pradesh. University of Poona.
4. Visweswara Rao, C. Some studies in gravity and magnetic interpretation. Andhra University.

### Engineering & Technology

1. Ray, Sankarprasad. Self-excited vibrations in machine tools and metal cutting. I.I.T., Delhi.

## BIOLOGICAL SCIENCES

### Biochemistry

1. Balasubramanian, K.A. Metabolic studies in central nervous system : Purification and properties of arylsulphatase A and B from sheep brain. University of Madras.

### Microbiology

1. Desai Jitendrakumar Dhirubhai. Metabolic properties of biotin-deficient *Aspergillus nidulans*. M.S. University of Baroda.
2. Doctor, Freney Homi. Studies on genetic transformation using mutants of *Rhizobium japonicum*. M.S. University of Baroda.
3. Rai, Jagdish. Studies on arbovirus antigens. University of Poona.

### Botany

1. Balakrishnan, N.P. Flora of Jowai and vicinity, United Khasi and Jaintia Hills District, Meghalaya, Assam. University of Gauhati.
2. Dabhade, Ganpat Trimbakrao. Mosses of Mahabaleshwar and Khandala, with notes on the genus *ricca* (Mich.) L. in Western Maharashtra. University of Poona.
3. Narendra, D.V. Studies into some Indian fungi with special reference to ascomycetes and coprophilous species. University of Poona.
4. Nema, Virendra Kumar. Studies in pathogenesis with special reference to the extra-cellular enzymes in vivo and in vitro of pathogenic and nonpathogenic fungi. Indore University.
5. Srivastava, Surendra Nath. Taxonomy, morphology, pathogenicity and host range of some selected isolates of *collectotrichum* (Corda). Kanpur University.

### Zoology

1. Das, Rathindra Chandra. Studies on the formation of vitamin A in freshwater fish. University of Gauhati.
2. Geetha Bali. Neurophysiological studies on the central nervous system of scorpion. Bangalore University.
3. Gupta, S.B.C. Studies on the structure and physiology of the digestive tract in *Rhinomugil corsula* (Ham.) and *Silonia silondia* (Ham.) in correlation to their feeding habits. Jiwaji University.
4. Khan, Mahmood Ali. Studies on some aspects of denervated pigeon breast muscle. M.S. University of Baroda.
5. Parameshwara Ayyar, S. Investigations on the biology of some fishes of the genus *Channa* gronov. Magadh University.
6. Sawant, Vijay Annasaheb. Studies on phospholipids of anuran tadpoles in metamorphosis. Shivaji University.
7. Srivastava, Sarita. Studies on the functional anatomy of the digestive system of some fresh water fishes in relation to their feeding habits. Bhopal University.

### Medical Sciences

1. Krishnamurty, V.S.R. The role of calcium ion in mechanical contractile response of vascular smooth muscle of rat. M.S. University of Baroda.

#### Agriculture.

1. Bhatnagar, Chandra Prakash. Studies on the availability of nitrogen and phosphorus in soils under different conditions. Meerut University.
2. Pandya, Mata Bhikh. Agronomical studies in nigar, Guizotia alyss incacata in saline-alkali soils. Kanpur University.
3. Pathak, Radha Krishan. Studies on the effect of nitrogen and sulphur upon the biochemical composition of mustard at different stages of growth. Kanpur University.
4. Sultan Singh. Epistasis and other gene effect in bread wheat, Triticum aestivum (L.). Meerut University.
5. Tiwari, Girish Chander. Studies on the resistance to insecticides in Strophulus oryzae (Linn.). Kanpur University.
6. Upadhyaya, Rajmani. Studies on mineral nutrition and variability in quality characteristics of rice. Kanpur University.

#### Home Science

1. Nirmala, P S. Nutritional evaluation of the supplementary value of low cast and locally available food namely horsegram, cowgram, field beans, sesame and amaranthus to poor rice diet. University of Madras.

#### SOCIAL SCIENCES

##### Psychology

1. Badami, C H. A Study of some aspects of motor development among pre-school children. Gujarat University.

##### Political Science

1. Patil, Vishwanath Tammanagouda. Nehru's role in India's national movement. Karnataka University.

##### Economics

1. Chandreshwar Singh. Khadi industry in Bihar with special reference to North Bihar. Magadh University.
2. Garg, Maganlal. Madhya Pradesh mein faslon ka dhancha: Arthik vishleshan. Indore University.
3. Saikia, T N. Surplus manpower in agriculture in Assam. Dibrugarh University.
4. Sudama Singh. Labour relations in the public sector: A case study of Hindustan Steel Ltd. Magadh University.

5. Thounaojam Surjaban Singh. Budgetary trends in Manipur, 1951-66. University of Gauhati.

##### Law

1. Koul, Autar Krishan. The legal framework of UNCTAD in world trade. University of Delhi.

##### Education

1. Bbirud, Ganesh Lotu. The construction and standardization of a diagnostic test in algebra. University of Poona.

2. Desai S D. The teaching of English as a literary language in the commerce and science Faculties of universities in Gujarat. Gujarat University.

3. Mukhopadhyay, Marmar. Barriers to change in secondary education. M.S. University of Baroda.

4. Patted, Gurubasappa Mallikarjun. Perceptual factors and success in teacher education course. M.S. University of Baroda.

5. Shah, Jyoti Girdharlal. A critical inquiry into the programme of home science education in the secondary schools of India. M.S. University of Baroda.

##### Commerce

1. Bawale, Padmakar Pandurang. Export trade promotion policy of the Government of India and its impact on commercial community: A case study of Kirlosker Oil Engines Limited, Poona, 1947 to 1972. University of Poona.

2. Bhagwati Prasad. Impact of corporate taxation on financial policies of companies with reference to cement industry. Meerut University.

3. Deo, Kamalakar Bhalchandra. Development of irrigation in Maharashtra State. University of Poona.

4. Satyanand Singh. Profitability measurement in public enterprises. University of Jabalpur.

#### HUMANITIES

##### Philosophy

1. Kuipers, F.H.J. The role of experience in Gandhian philosophy. University of Poona.

2. Sharma, Jai Kishan. Philosophy of work-oriented education in context of democratic socialist India. University of Poona.

3. Shrivastava, Mankumari. Adhunik Bharat mein shiksha ke uddeshonka darshnik vivechan. Indore University.

##### Linguistics

1. Namboodiri, E.V. Narayanan. Dialect study of the hill tribes of Travancore. University of Kerala.

2. Shanmugam Pillai, C. Standard semantics of standard Tamil. University of Poona.

##### Literature

1. Agarwal, Abha. Search for self in the poetry of Emily Dickinson. Meerut University.

2. Maharaj Singh. Eugene O'Neill's conception of tragedy. Meerut University.

3. Sharma, Surendra Kumar. A linguistic study of errors in the written English of students joining B.A. in the Hindi speaking area. Meerut University.

4. Shori, Gopal Krishan. Browning's imagery and what it reveals. Meerut University.

##### Sanskrit

1. Amarjit Kaur. Influence of Indian philosophy on Sanskrit poetics. University of Delhi.

2. Indu Bala Prasad. Mudra Rakshas ka vivechnitmak anushilan. Magadh University.

3. Jha, Jagarnath. Vyakti vivekkrit mahimmatiya vishishtmadhyanam. K.S. Darbhanga Sanskrit University.

4. Jha, Vashishtha Narayan. A linguistic analysis of the Rigvedapadapatha. University of Poona.

5. Joshi, Suneta Jagannath. Datta sampradaya and philosophy of advaita with special reference to Srivasudevananda Saraswati (Tinbe Swami). University of Poona.

6. Mishra, Achala. Mahakavi Kumar Das ittha unka Janki haran: Ek adhyayan. Kanpur University.

7. Mishra, Kanti Kanti Jyotish shastra samikhsha K.S. Darbhanga Sanskrit University.

8. Mishra, Sudhanshu Shekhar Narayan Naindhya chantiya shastriyamadhyanam K.S. Darbhanga Sanskrit University.

9. Mishra, Yaduvansh. Brahma-varvrat puran mein sanskrilik evam samajik jeevan K.S. Darbhanga Sanskrit University.

10. Pendse, Sudhakar Narhan. The oath and ordeals in dharmashastra M.S. University of Baroda.

##### Hindi

1. Dava, Sushila N. Surdas aur Namdev: Ek adhyayan. Osmania University.

2. Dikshit, Kamla. Madhodas kee rachnayen: Alochnitmak adhyayan. University of Poona.

3. Jain, Pushpita. Panikavva kee darshnik poethika. Indore University.

4. Rai, Ramesh Chandra. Hindi ke visheshan padbandhan ka bhasha vygyanik adhyayan (varnatmak). Meerut University.

5. Suresh Bala. Beesin shatabdi kee Hindi ke samajik natkon mein churit madhvayav. Meerut University.

6. Vir Singh. Kamyani kee katha kee tividh pakshon ka gyanatmak anusheelan. Meerut University.

##### Tamil

1. Balachandran, S. Kaviman Desikavimayakam Pillai: A critical study. University of Madras.

2. Gnanasikhamani, V. A study of H A Krishna Pillai's works. University of Madras.

3. Nagalingam, A. Thiru Vi. Ka's works. University of Madras.

1. Maringanti, Narasimhacharyulu. Social, religious and cultural conditions as depicted in the Telugu prabandhas from 1500 to 1600. Osmania University.

##### Geography

1. Sharma, Shree Kamal. Changing pattern of resources in the Baghel Khand plateau. M.P. University of Saugar.

##### History

1. Amritphale, Sudhakar. Malwa ka swatantrata andolan ka itihas, 1857-1948. Indore University.

2. Dixit, Y.I. A study of the administrative organization and its working in Gujarat from the beginning of the Mahraka period to the end of the Chalukya period. Gujarat University.

3. Joshi, Sulochana. Devas rajya ka prashasan, 1727-1948. Indore University.

4. Om Prakash Singh. A cultural study in the early coins of India from the earliest times up to Gupta period. Magadh University.

5. Ramachandran, C.B. Tamil society in the seventeenth century. University of Madras.

6. Sinha, Raj Govind. Bharatavarsh par videshi akraman ka itihas. Aadi kal se Arab akraman tak. Magadh University.

7. Subudhi, Umakan. The Bhauma-Karas of Orissa. Berhampur University.

Johnson, Roger T. "The nature and condition of social research". *Journal of Higher Education Supplement* (196); Summer 74: 47-64.

Johnson, Roger T. "Assessing coordination". *International Review of Higher Education* 2(1); 75: 7-46.

Johnson, Roger T. "Doctors, masters and the modern university". *Times Higher Education Supplement* (195); 18 July 75: 1.

### EDUCATIONAL PSYCHOLOGY

Cole, Alan. "Decisive traits points to a formula that predicts student behaviour". *Times Higher Education Supplement* (196); 23 July 73: 8.

Davis, Gary A. and Subkivisk, Michael J. "Multidimensional analysis of a personality based test of creative potential". *Journal of Educational Measurement* 12(1); Spring 75: 37-44.

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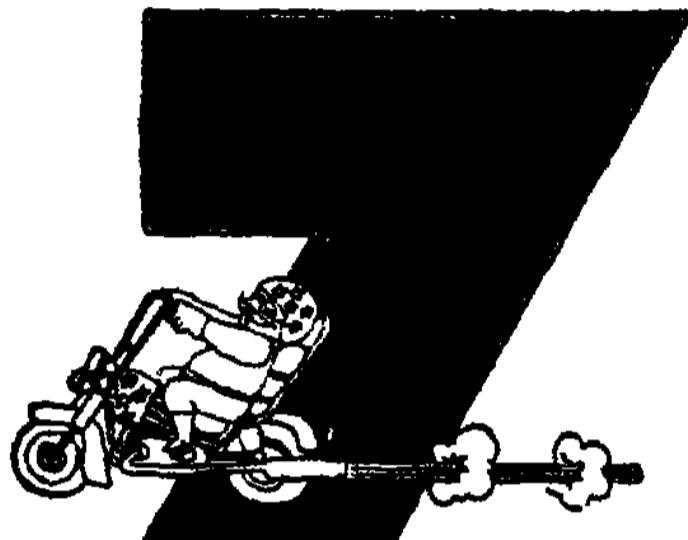
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Conference in New Delhi. (Report inside)



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# UNIVERSITY NEWS

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of the Association.*

Editor: KALJEE KUMAR

## Idleness Unlimited

IS TEACHING at the university and college level more strenuous than other types of work? Is it, for example, more strenuous than sitting behind a counter or an executive desk, or working in a bank or a hospital? Whatever be the nature of the job, the usual hours of work in most places are 7-8 per day.

When it comes to university and college teaching however the picture is very different. Most teachers work for 3-4 hours a day. That is on the days when they are working. According to UGC norms, a University college should work for 180 days during the year. In actual effect not many institutions work for more than 100 days per year. Nominally speaking, they are open during the remaining 100 days or so. But then there are all kinds of interruption to work. Sometimes the students are on strike. Sometimes the teacher is not available. Sometimes examinations are going on. Whatever be the explanation, the fact remains that an average teacher does not work for more than 100 days in a year and for 3-4 hours per day.

Generally speaking, two reasons are given for this reduced quantum of work being done by University and college teachers. One, that these teachers have to prepare their lectures at home and, two, that they need some leisure time to do their research work. Both these reasons have some substance in them. But it is neither honest nor correct to say that these reasons can justify the existing state of affairs. The fact of the matter is that a certain amount of preparation has to be done at home but that is mainly in respect of Honours and M.A. teaching. Undergraduate teaching is so easy that not many feel called upon to burn the midnight oil for their morning lectures. When it comes to research, it is best not to press too far. Some research is being done, a certain portion of it is even creditable but the general standards of performance are unsatisfactory. In any event, it is not everyone who undertakes research. Those who do so might have special facilities made available to them.

Most universities observe a 12-week summer vacation. In addition, there are usually two other breaks, stretching over several weeks each. Nobody stops to ask why it is necessary that those in teaching should have such long vacations. Almost unthinkingly, we have taken over a practice which is followed in countries which have solved their problems of growth and are affluent by now. For us to ape their style of work in respect of those things which suit us and reject their overall commitment to hard work, high quality and good performance is a piece of hypocrisy which it is difficult to defend.

Indeed it is time that we recognised one vital truth about our educational system today. If standards of performance are not satisfactory, this is owing to, apart from other reasons, our unwillingness to work hard. Another name for this state of affairs is idleness. As everyone would recognise, quite often even good people begin to degenerate because there is not enough work to do. In our situation today students do not work hard because it is not required of them. The reason for it is simple. Students can be made to work hard only when the teachers are also willing to work hard. What the teachers however are interested in is that they should continue to draw a whole-time wage and do a part-time job.

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## VCs Conference

### P.M. WELCOMES EMPHASIS ON NON-FORMAL EDUCATION

THE Prime Minister, Smt. Indira Gandhi, inaugurated the two-day conference of Vice-Chancellors at Vigyan Bhavan, New Delhi, on September 30, 1975. In her address she referred to the problems of increasing number in educational institutions. She said many of our young people flock to colleges not because of any love of knowledge or learning, not because of any aptitude, but because they cannot think of anything else to do and also because it has become something of a status symbol. Our teachers are mostly pre-occupied with their own publications and visiting professorships so that the gap between the teachers and the students is growing. Students have a feeling of being neglected and much time is spent not on teaching and research but on trying to secure grants without which the programmes cannot go ahead.

She said that first thing that we have to do is to try and bring back a better relationship between teachers and educational administrators and students. The students must feel that teachers are more accessible. Their general grievances must be looked into quickly. There is a talk of restricting higher education. Some reduction is essential but it should be brought about in a way that the weaker classes do not feel that the door is shut against them. We must have special programmes necessary to enable the backward class students to catch up.

She welcomed the emphasis laid on non-formal education on enabling youths and all the people to educate themselves and obtain degrees, if necessary through correspondence courses. We have to think of new methods and the role of Radio and TV in education. In this context she mentioned the usefulness of the SITE programme.

Reaffirming her faith in the academic freedom she said that the freedom to investigate the truth, publish the findings without fear, with conscience and the scrutiny of scholars is justifiable. But such freedom cannot be converted into political licence. The university cannot be a sanctuary from law.

With regard to the outside interference, she said that some of the interference in educational institutions is certainly due to troubled waters and some due to deliberate troubling of waters. But even when there is no troubling, subtle negative influences are found to be working in the institutions of higher education and the universities. Sometimes these are political ideas which come in the garb of religion or devotion to language or some other thing which may

seem far removed from politics itself. But it was really dangerous when there is a subtle attempt against our nationalism.

She said that today's student is somewhat torn between the false glamour of what is known as revolution and the tantalizing glitter of western affluence. Sometimes they oscillate between the two and sometimes they try to combine the two. She said that education is a training of all one's faculties to absorb, to adapt and to create. It should guide one towards maturity which means the willing acceptance of responsibility. It should inculcate the spirit of cooperation and helping of others.

Our educational institutions have largely been fashioned to impart knowledge which soon becomes obsolete. But education as we know and as the ancients have said is not just knowing but it is a becoming. And this is what we hope that the universities will try for. None of the high ideals can be reached in one

"...I have quoted from Shri Aurobindo and I would like to use some words which have been used by one of the most original minds of today. He is an old man in years but I think far more living in the future than many many young people. I am talking of Buckminster Fuller. He has said that what we need today is a classless, raceless, omni-cooperative, omni-world humanity".

— Indira Gandhi

step. All we can do is to try and move in a particular direction. We can reach out to this 'omni-world humanity' only when we first reach out our own Indian humanity and see what their problems are and how we can help.

She was glad that many young people today are doing useful social work of different kinds in rural areas or in the cities. All such ventures need to be encouraged and we must see whether we can incorporate them in the regular university studies without their losing certain basic things which they must do in the universities.

Prof. Nurul Hasan, Union Minister of Education & S. W., in his address to the Conference referred to the different programmes of action for the intensive development of higher education in the country and mentioned some of the achievements of higher education in the post-independence period. He said that a large and highly trained pool of manpower has been provided to the country which is the third largest in the world. According to the 1971 census, there are 1.8 million scientists, 61,000 agricultural personnel, 185,000 engineers, 135,000 university and college teachers and 138,000 doctors. The services of these personnel are not only supporting the national programme of development but are also becoming increasingly available to the other developing countries. In the field of scientific development significant contributions have been made which have

received international recognition. Higher education has spread among women in rural areas and many weaker sections of the community like the scheduled castes and scheduled tribes. It has provided vertical mobility for several suppressed groups and created new workers and a new type of leadership which did not exist before.

While acknowledging the achievements of university system, Prof. Hasan said that the system has also developed many serious weaknesses. There has been a lot of unplanned and uncontrolled expansion of higher education. While standards have improved in some respects, they have gone down in other. There has been an increase in sub-standard institutions which are academically non-viable. Students motivation has deteriorated partly due to indiscriminate admissions and partly because of growing unemployment. The curricula are often out-moded, the examination system is rigid and obsolete. The standards and methods of teaching require immediate reforms.

In spite of extreme financial stringencies a policy of open door expansion of higher education has been pursued all these years. But this indiscriminate expansion had now to be checked.

In this context he said that the adoption of the new pattern of 10+2+3 is most significant. He appealed to the Vice-Chancellors to extend their full support to the new programme and to utilize this opportunity to introduce major educational reforms and to improve standards in their universities.

He said that the Government is considering a proposal to establish a 'National People University' which will function on an open pattern. This was one of the measures for ensuring that higher education was not denied to any individual with necessary abilities and desire.

Prof. Satish Chandra, Vice-Chairman, UGC, welcomed the Prime Minister for having consented to inaugurate the conference. He mentioned the various proposals for the re-generation of higher education. He said that the Commission is trying to regulate admissions, raise standards, modernise the syllabi and make them more relevant to our social national needs.

The conference was attended by 110 Vice-Chancellors and Heads of Institutions of higher learning. The focus of discussions was on restructuring of courses, preparation for introducing the 10+2+3 pattern of education, equality of educational opportunities, examination reforms including improvement programmes, student community and youth development programmes.

#### Recommendations made at the Conference

The Conference of Vice-Chancellors convened jointly by the Union Education Ministry and the University Grants Commission was held on September 30 and October 1, 1975, in New Delhi. After the inaugural function, the conference was divided into three groups. Dr. Malcolm S. Adiseshiah, Vice-Chancellor, University of Madras, presided over the group on Planning of Higher Education. Dr. S.N.

Sen, Vice-Chancellor, University of Calcutta was the chairman of the group on Quality Improvement Programmes and Dr. K.L. Shrimali, Vice-Chancellor, Banaras Hindu University, presided on the group concerning Students' Amenities and Youth Developments Programmes.

The conference resolved not to expand the facilities for higher education any further for the present except in backward areas and that too in a planned manner. To accommodate the growing number of enrolments in institutions of higher learning which has already reached the 4 million figure, the conference decided to increase the facilities for providing non-formal education through correspondence courses, private studies, evening classes, study centres and para-degree courses and diploma courses.

Dr. Malcolm S. Adiseshiah after the conclusion of the conference said that the special reservations for students belonging to scheduled castes and scheduled tribes and other backward classes would continue to be made in formal courses. To improve the quality and standard of new three-year degree courses, he said that part of the existing BA, BSc and B.Com courses should be pulled into the new two-year higher secondary courses. This would facilitate raising the standards of the degree courses.

Dr. K.L. Shrimali said that his group has recommended that a coordinating agency should be set up in each university to coordinate the various youth programmes of NCC, NSS and national integration committees. A survey of the conditions of those students who could not be accommodated in hostels but were living elsewhere in appalling conditions near university areas should be undertaken by the University Grants Commission as there was an urgent necessity for improving their living conditions.

Dr. S.N. Sen said that the training facilities provided by the UGC to the teachers from affiliated institutions should be made available to larger number of teachers. The conference supported the idea of autonomous colleges for purposes of innovations and other specialised activities. It was recommended that such colleges should be located in rural areas so that they could function as growth centres.

It was generally accepted that the present system of examination should be given up as early as possible. Each university should experiment on different available methods. The semester system should be introduced wherever possible. Internal assessment should be introduced with adequate safeguards. The proposal for having question banks was also accepted.

Professor Satish Chandra, Vice-Chairman of the University Grants Commission said that there was a greater realisation that the universities must use its resource material to inter-act with the community. The acceptance of the 10+2+3 system would enable the universities to raise their standards.

In a resolution adopted by the conference, the Vice-Chancellors assured the Prime Minister that they would take effective steps to implement the suggestions outlined in her speech and steps would be taken to promote and maintain good relations among students, teachers and educational administrators. □

# University Courts: an anachronism

*Author R. P. Puri pleads for the abolition of University Courts and for trying some alternative arrangement in some Universities to begin with.*

IN OUR Universities the hierarchy of statutory authorities have virtually remained unaltered since 1857, when our first three universities in Bombay, Madras and Calcutta were established, except that for some time they did not have Academic Councils. This exception was accidental, for the universities were then mainly concerned with the conduct of examinations.

Of the main authorities, namely the Court, the Executive Council and the Academic Council, the functions of the first one have remained more or less deliberative. The Court meets annually to review, in a limited manner, the acts of the other two authorities, to exercise all powers not otherwise provided for by the Act or the Statutes, and to receive a report on the working of the university, the statements of receipts and expenditure, the audited accounts and the financial estimates. With these, what may be called, deliberative powers assigned to it, the Court has been described as a supreme authority in the statutes of our universities. Such a description, without any justification whatsoever, is nothing but a *mismomer* because it is occupying the position of supremacy more in theory than in practice. Furthermore the process of democratization set in motion by the recommendations made, more recently, by the Gajendragadkar Committee on Governance of Universities and Colleges will soon demolish even the remaining myth of the theoretical supremacy of the Court.

In 1961 the Union Education Ministry appointed a committee to consider the organizational structure of our universities. The Committee which submitted the outline of a 'Model Act', suggested, among other things, the representation of a sufficient number of lay members on the Courts of the universities so that they might come in contact with the outside world and that the so-called interaction would reflect itself in the efforts on the part of universities to fulfil the

hopes and aspirations of society. Consequently, the involvement of a larger body of individuals, representing different shades of public opinion, was considered desirable because it would give a new dimension to the framing of the university budget, the structuring of its courses, and the reviewing of the academic activities of the university, the last one being highlighted in its annual report. The Gajendragadkar Committee has also recommended that the Court should review from time to time the broad policies and programmes of the university and suggest measures for its improvement and development.

Whether the Courts have performed their functions well and whether their performance has had any innovative effect on the working of our universities, are debatable questions. Whether these are audited accounts or financial estimates, the Courts have almost invariably been putting their seal of approval on these documents as presented to them. If any university was found in financial straits, hardly any planned efforts were made to mitigate the circumstances which brought forth such an unavoidable situation in which our universities have often found themselves and continue to do so. Rarely are the deliberations of this body impregnated with any plan of action which would bring about improvement. The imbalance between teaching and research would not be corrected unless it is pointed out by an enquiry committee whose membership is almost invariably foreign to the University. It is unlikely that an Court ever asked for comparative figures of achievement of the university in various fields of its academic activities in order to satisfy as to whether it is treading on the right path and is contributing its mite to the advancement of learning and knowledge. Even such important questions as, how far the University has accomplished its objects? have escaped the attention of this august body. Does not this, thus, show that it has fallen into desuetude?

Furthermore, the question arises whether persons belonging to various professions such as arts, agriculture, law, science, industry and commerce, who are accorded special representation on the court, have influenced the policies and programmes of our universities in right earnest. Indeed this question, when examined closely brings to light the extent of apathy with which the universities are being treated by persons representing these professions. But those who squarely hold them responsible for their phlegmatic attitude or worse, towards these institutions, will be committing an act of injustice. It is difficult to expect the lay members to suggest new programmes and policies for they are not in regular touch with the university affairs and are not conversant with the latest developments which are taking place in institutions of higher learning, both within and without the country. It would perhaps, therefore, be uncharitable to put any blame at their door for not involving themselves actively in the affairs of the university, especially when they are called upon to meet only once a year, and that too in a crowd, to dispose of the work which with the passage of time has become more or less a kind of ritual.

The provision incorporated in the Statutes of a university from the very inception, empowering the Visitor/Chancellor to nominate persons on the Court, presumably was made to enable the Government to induct into this so-called supreme authority, persons of its own choice so that it could exercise influence in the formulation of university policies. But that situation does not exist any longer. The Government need not now exercise its influence by planting its supporters on the Court in order to make the university tow its line. On the other hand, if the advice given by the Government in respect of a certain matter is in the overall interest of the university, it is unlikely that the university would ever refuse to accept it. Moreover, the complete dependence of our universities on government funds has also rendered the representation of businessmen on our Courts meaningless, because donations expected of them at one time to meet at least part of their financial liabilities have never been forthcoming in the desired quantum.

Change is the law of life. Customs and traditions undergo change with the passage of time. Considered in this context, there is no sanctity attached to the numerical strength of university authorities. If the past is any guide, our inveterate conservatism in restructuring university bodies, especially the Court, has so far enabled us to effect only minimal changes which have helped us merely to mark the time : its nomenclature has been changed from Court to Senate and vice versa, and its composition has been modified from time to time to make it appear somewhat more broad-based than before.

Having examined the nature of the functions of the Court and the manner in which it has been able to perform them, it will not be an exaggeration to say that it has outlived its life. Any effort to activate it either by modifying powers or altering its composition, will be an exercise in futility. This remark is testified by the fact that the recommendations and suggestions made by a series of commissions and committees heralded by the Radhakrishnan Commission (1948), have merely tried to justify the existence of the Court in one way or the other.

In contrast to the conservative attitude towards restructuring the Court, the Finance Committee is now longer recognised as an authority of the university. A great deal more has been suggested in favour of diffusion in the powers of the Executive Council and the Academic Council so that committees at department and faculty levels could exercise greater autonomy. Furthermore, various committees have recommended the introduction of the concept of decentralization at greater pace in the functioning of different authorities of the university by suggesting the establishment of numerous committees, councils for student affairs and so on. A university organised on these lines will undoubtedly be an entirely different university from the one which may have existed several decades past. If these commissions could be so adventurous as to suggest such innovative changes in the organisational structure of a university set up,

they could have also suggested the reorganization of the Court on some rational lines or at any rate discussed the utility or otherwise of the so-called supreme authority whose functions in practice have become nothing but a ritual. However this is not to be.

There is still another aspect of the matter which deserves to be mentioned. We are all aware that most of our universities are inextricably involved in financial crises. We can modestly assume that on each University Court have been nominated on an average ten to fifteen persons who come from outside the city in which the university is located. We can further presume that generally a university spends about a thousand rupees towards the travelling expenses of a member on the eve of the annual meeting of its court. With nearly one hundred universities functioning in the country the total expenditure on this count would easily add up to a million rupees. This amount could very well be utilised for a more useful purpose. The universities could for example, award scholarships of the value of rupees one hundred each to over twelve hundred students a year. We are now in an age of scarcity. Can we living in the portals of learning and supposedly in possession of all the intellect that is available to mankind, afford such a cossal waste of scare funds ?

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# Job-Oriented Courses in the Field of Higher Education

S.V. CHITTIBABU

IN THE present educational set up, there is very little linkage between education and employment. This may be attributed to the fact that no concerted effort has so far been made to relate the output of the educational system closely with job opportunities or man-power needs. There are doubting Thomases who feel it is going to take a very very long time to establish the desired direct link between education and employment. But such prophets of gloom are found everywhere these days. However, let it not be forgotten there are still many people of insight and vision who are all keen and anxious to dispel the present clouds of despair by offering not only their suggestions and advice but also their assistance and co-operation in such ways as are needed. These are the people who have a wider perspective and we come across them in several service organisations such as those represented in this assemblage. And the University would like to step into their world and establish meaningful dialogues with them with a view to devising strategies for building a nexus between higher learning and the pressing skill demands of society.

Against this background, the following objectives and implications of the proposed plan of action need to be set out:

(1) Arrangements should be set afoot for securing as far as possible a situation in which man-power requirements and adequately met by the annual supply of higher educated man-power cohorts coming out of the University and the Colleges affiliated to it.

(2) All possible efforts should be made to see that higher educated man-power cohorts do not get into a mood of frustration or

despair because of their remaining unemployed or being wastefully under-employed. The courses of studies which are at present provided by the University should be constantly reviewed and renewed in the light of the changes in the pattern of employment. This would imply that the educational system should be made so flexible as to provide the best possible educational preparation of students for the different occupational groups of higher educated man-power.

(3) There is need for evolving a new type of "promotion extension" courses of studies for secondary educated persons already in service but seeking promotion in their respective fields.

It has now become imperative for the University to undertake adequate measures to achieve the above objectives with the active collaboration and co-operation of people who are involved in a wide spectrum of agricultural and industrial activities. While there is presently a move to vocationalise secondary education-a move in the right direction, the University for its part feels impelled to keep step with the march of time and forge balance and approaches in tune with the aims and objectives discussed above. In fact a committee was recently set up by the University to go into this question of starting job-oriented courses. Possibilities of offering courses with a pronounced bias towards practical application of knowledge in certain chosen fields have been examined. The members of the Committee have strongly expressed the feeling that job-oriented courses would be somewhat of a panacea to the present ills of unemployment and under-employment. Thanks to these courses. The students of

arts and sciences will be exposed to some organised practical training under proper guidance. There are three ways by which a good beginning could be made by way of introducing job-oriented courses in the University and its specific areas can be introduced at the undergraduate level, e.g. Tourism, Book Industry, Journalism, Company Secretaryship, Interior Design and Decoration, Food Preservation, Hotel Industry, Public Relations etc. To these courses only a limited number of students, say 25 to 35, may have to be admitted normally. The impact naturally will not be that striking. But a second approach could be made by way of adding to the existing courses certain additional electives under Part III. Of course, these electives would need to be job-oriented, because thereby, they could help a large number of students to get into the world employment sooner rather than later. Thirdly evening colleges could throw open their gates to more working people or come in for courses which would help them to improve professional knowledge, and experience with a view to securing promotions in their fields. In these days there is so much of emphasis laid on continuing education quite rightly too, and this concept needs to be translated into action expeditiously.

It would thus be seen that the job-oriented courses may be offered either at the degree or Diploma or Certificate levels and they may be either full-fledged courses lasting over a period of three years or they may even be offered under-programmes of part-time or what may be called own-time education.

In the light of the points discussed above, it would be seen that the University is keenly desirous of initiating steps in the direction of establishing a close rapport with all sectors of industrial, agricultural and technological engineering activities. The participants in this meeting are

The author is Vice-Chancellor, Madurai University.

known for their abiding interest in services which could give a boost to the economy and social uplift of our community. The service organisations with which they are intimately associated have many planks in their programmes. And I need not point out how these programmes will assume greater dimensions of importance if only they could help in the revitalisation and modernisation of our University Education in the context of the needs and aspirations of our society. The vast and rich experience and expertise of the participants are deemed as an asset to be capitalised upon by any University in worthwhile ways. I

would therefore make a fervent appeal to them to share this asset with the University and its faculty so that the formulation of the proposed job-oriented courses is facilitated as well as expedited.

May I also avail myself of this occasion to make another appeal. In advanced countries which I had visited, I noted that there was a close liaison between education, research and development in industry and agriculture. The talented youth of those lands are identified and given all the encouragement and support needed, by way of scholarships to motivate and stimulate their research works in different disciplines. Such scholars enter into

contracts with the supporting industrial establishments or firms according to which they would serve the latter for stipulated periods and thereby help in their growth and development on sophisticated lines. I earnestly hope that this example would be emulated by firms, factories and such other enterprises in and around Madurai University area. May the promising youngsters coming out of our University be given the help and the opportunity to undertake positions of responsibility and work for the excellence of the industry and agriculture of Tamilnadu.

(Continued from Page 7)

The vacuum caused by the abolition of the university Court would look so conspicuous that perhaps some alternative arrangement need to be devised so that the interests of the university could be served in a more useful manner. Whatever the alternative device may be, it should not be a replica of the existing system.

However the universities may continue to hold annual meetings, but in a different fashion. The attendance at such meetings should no longer be confined to faculty members at the senior level as is the case at present. Documents such as financial estimates, audited accounts etc. should not be discussed at these gatherings. Instead they should be disposed of by the Executive Council and the Finance Committee which are responsible for such matters

The annual meetings of the university should be attended by all the faculty members alike, without any distinction of the position held by them or the number of years of their service. In order to make these meetings manageable, it would be desirable that each department should nominate at least three to four faculty members to attend the meeting. The consideration that should weigh in making such nominations should not, as stated above, be the status of the teacher in the academic hierarchy or his seniority among his colleagues, but positive contribution that he will make at such meetings. It is because representation of faculty on the Executive Council and the Academic Council has so far been in line with this policy, and, therefore, more junior teachers harbour a feeling as if they cannot contribute to the life of the university. Similarly, student representatives should be nominated by the Vice-Chancellor from among those who have given a fair account of their academic achievements. The non-teaching staff should also be afforded an opportunity to take part in the deliberations of the Court's meetings. The Academic Council and the Executive Council should nominate two or three persons each from outside the university and not necessarily from a place far off from where the university is located. They could

include Members of Parliament/State Legislatures and educationists. The persons so nominated must be those who have contributed, directly or indirectly, to the development and promotion of university education and higher learning in the country. The considerations such as their leanings towards a particular "ism" should not be a deciding factor in their nomination. In fact, the names should be such as to leave no room for suspicion or criticism in this regard.

At the meetings only the annual report containing a detailed account of the activities of the university during the preceding year and the University's plans for expanding its academic activities during the following year should be circulated. Constructive criticism of the working of the university and suggestions for its improvement should be welcomed and deliberated upon. It would be obligatory on the part of all those attending the meeting to see that its proceedings are conducted in a dignified manner. No individual problems may be allowed to be discussed, unless they indirectly affect the entire community—students or the faculty or the non-teaching staff, jointly or severally. In fact any problem that is brought before the annual meeting for its consideration would be such as would affect the entire university. It would be obligatory on the part of the university authorities to implement the unanimous recommendations made at the annual meeting within the physical and financial constraints in which it is placed and in terms of the provisions of its statutes and ordinances after these have also been considered by the Executive Council and the Academic Council, as the case may be. It is time that we tried an alternative arrangement to see how it works. The experiment need not involve all our universities immediately, for if attempted, the results are likely to end in futility. On the other hand, the authorities concerned can easily muster the nerve to start the experiment at one or few universities which are still in embargo because they will not have much difficulty in making suitable statutory provisions to see such an experiment through.

## Principals Meet in Delhi

An All-India Conference of Principals was organised by Delhi University on October 4 and 5, 1975. Over one hundred and fifty principals and educationists participated. The Prime Minister, Smt. Indira Gandhi, inaugurated the conference. In her address she referred to the 'competitive and destructive politics' of the campuses. She said that the students and teachers should be aware of the political ideas and ideals. But the 'professional students' should not be encouraged because they remained on the campus not to study but for other purposes and were encouraged by some political parties. She called for a new direction to education which should be aimed at removing the apathy of the youth.

She hoped that the 10+2+3 system of education would enable the students to learn practical trades. This would give them an opportunity to do what they like to do. The present system of education largely ignored the practical aspect of learning. She said the problem of 'brain drain' was there because of persistence of 'intellectual dependence' and not because of money. After the attainment of political independence it was necessary to strive for intellectual independence which would reduce the dependence on foreign countries and their technology. Knowledge should not be limited to formal education and different groups from different fields should meet and pool their knowledge for the common good. It was therefore necessary to continue the quest for excellence in all fields particularly scientific and technological research. She said that English was essential communication with the rest of the world and should not be ignored at the cost of improving the status of other languages.

Professor Satish Chandra, Vice-Chairman, University Grants Commission, who presided over the conference said that the UGC had been working for evolving a scheme to rectify the disparities between the rural and urban colleges and for providing good quality education to people of all classes. The idea of autonomous colleges had found favour with many principals and it is expected that about hundred such colleges would be set up in the fifth plan. He said that colleges where strength of the students was not enough can be grouped into academic centres which have common facilities. A senior member can be deputed to give instructions at this centre. He also called for a planning body to fully utilise the various programmes for the development of colleges. He stressed the need to raise the standard of education particularly in undergraduate classes.

Prof. Nurul Hasan, Union Education Minister, in his valedictory address suggested the raising of academic standards. The principals and teachers had a special duty to perform in the development of intellect. It was essential that young people be taught to apply the knowledge they had acquired in the solution of their problems. He stressed the need for more sports education for girls. He also referred to the imbalance in the growth of colleges and unchecked expansion of private managed institutions and suggested a new yardstick for the selection of teachers from backward classes to remove the injustice done to them in the field of education.

Prof. R. C. Mehrotra, Vice-Chancellor of Delhi University said that there had been a very fast expansion of higher education since independence. There are about 4 million students presently enrolled in the institu-

tions of higher learning as compared to a quarter million in 1947. The youth does not suffer from lack of discipline but is just apathetic in this outlook. This attitude of the students, teachers and the administrators has encouraged a microscopic minority to create unruly scenes of intimidation and violence in our colleges and universities. These institutions are now working in an atmosphere of peace and tranquillity for the first time.

The two-day conference adopted a thirteen-point plan for improving the academic standards in colleges.

One of the important recommendations was that colleges should have built-in mechanism to periodically assess the competence of teachers, principals and faculty. There should be orientation programme both for teachers and principals. The conference agreed that the management of educational institutions should not be in the hands of political elements and partisan politics among teachers, students and employees must be discouraged. The disparities between urban and rural colleges on the one hand and state managed and private institutions on the other should be removed to improve the academic atmosphere. The undergraduate courses should be made more relevant to the social and economic needs of the community and in this context provision be made for vocational guidance. The libraries and laboratories should be fully equipped and study leave with full pay be made available to teachers in large numbers.

The conference noted that certain private managements were not paying full salaries to teachers and recommended that the revised pay scales for university and college teachers should be uniformly adopted by all states.

The conference suggested that education be declared concurrent subject at all levels and a national policy on education may be drawn up and be reviewed periodically.

of education planning and examination reforms.

## LIC'S Group Insurance for Students

A MAJORITY of students, while studying, face a number of difficulties, unforeseen circumstances, accidents and meet even untimely death which bring either on themselves or their families disastrous calamity. The Group Insurance Scheme aims at bringing an end to this state of affairs.

The Group Insurance Scheme is not merely a scheme to meet the exigencies of accidents. It is a sort of life Insurance scheme which covers under it at a time a number of individuals and extends protection to all of them. While it has not been possible to cover even a crore of individuals out of India's population of sixty crores under the usual insurance schemes, the Group Insurance Scheme aims at bringing a large section of the community, especially the youth-wealth of the country, under its protective wing.

Under this scheme, mills, factories, offices, schools, colleges etc. form units and the employees who work there, the students

# Round Up

### Burdwan Plans Examination Changes

THE Burdwan University has decided to change the examination system both at the undergraduate and postgraduate levels from the academic session 1975-76. The new system would be made applicable to students belonging to Arts, Science and Commerce faculties.

Under the new scheme the postgraduate courses would be divided into two-halves and the examination in each part will carry half of the aggregate marks. Each part will span about 12 months and the examination in part I will be held not earlier than 12 months from the date of the commencement of the classes. The examination in part II will be held not earlier than 12 months after the expiry of part I examination. A separate examination for external M.B./M. Com candidates will however be introduced.

For the undergraduate courses there shall be two-term examination in the first year and three examinations each in second and third year classes would be held. In the first year there shall be two examinations to be held in January and April and the second and third year the three examinations would be in the months of September, January and April each year. The old system of examination with regard to three-year degree (honours) course will however continue.

The syllabus will also be broken up in conformity with the term-examination. The division of the syllabus would be made available for the information of the students. The Vice-Chancellor, Dr. Ramaranjan Mukherjee proposes to visit the colleges and meet the district magistrates and

principals to discuss the steps that would be necessary for the smooth conducting of the examinations in December this year.

### Educational Exchange

THE Model of Institute of Education and Research Organisation, Jammu recently organised a programme for bringing closure contacts between teachers from North and South. A group of seven teachers from South has been invited to tour Jammu and Kashmir. Mr. A.K. Gupta, Director of Institute hopes to send a selected group of teachers from Jammu and Kashmir in the next year to South on a similar mission. The Research Institute at Jammu is affiliated to several International education research organisations. During recent years the organisation has organised seminars and conferences on various aspects



Chief Minister of Gujarat & others at the inauguration of the Group Insurance Scheme for students at Gujarat University.

or teachers who study or teach there, are group-insured. The premium rate is very low and on the demise of one or more members belonging to the insured-group the dependents of each individual get uniform benefit.

This scheme is a boon to the students and workers who cannot afford to take out individual insurance policies, as it inspires into them not only a sense of safety against unforeseen exigencies but also inculcates in them a feeling of fraternity and cooperation.

Under the burden of debts, unforeseen calamities, untimely deaths, etc. ordinary man feels helpless and sees no way out. In these circumstances this scheme comes to his rescue and becomes a mainstay of himself and his family, as the Life Insurance Corporation, under this scheme takes upon itself on behalf of the employers the responsibility to help those covered under the Group Insurance Scheme.

The concept of Group Insurance is especially beneficial to the students and it is felt that it is an essential necessity for them to provide protection under this scheme to their families in the event of their untimely deaths. The Vivekanand Education Foundation which runs a string of Colleges, affiliated to the Gujarat University and has been conducting various welfare schemes like "Self-dependence Fund", "Health Centre", "Learn while you earn", "Book Bank", "Talent Search", etc. has taken a new step in the direction of its student-welfare activities by introducing this novel scheme of group insurance in its constituent colleges which covers nearly five thousand students. Gujarat is the first State in India to introduce this unique scheme and credit for it goes to the Vivekanand Education Foundation. To encourage students to avail of this benevolent scheme, the Foundation has taken upon itself the responsibility of defraying the premium charges for the first year.

Smt. Balubhai Janabhai Patel, the Chief Minister of Gujarat formally inaugurated the scheme at a function held recently which was attended among others by officials of the Life Insurance Corporation of India and the University. It is hoped that more and more educational Institutions under the Gujarat University, as indeed those in other States will follow suit and introduce this scheme for the benefit of their students.

### New University Laws in Sri Lanka

THE Commission set up by the Government to study the ragging incidents which took place recently at various campuses of the University of Sri Lanka has recommended that ragging, in any form, should be totally banned. It also said that students who indulged in ragging should be debarred for life from all university examinations, both as internal and external students.

Among other major decisions of the Commission, there were several new measures to re-organise university administration. The question of appointing a student representative on the university bodies including the Board of Governors is to be reviewed in the light of present developments. One recommendation said that even if a student served on such bodies, he was to confine himself only to topics which related to student welfare.

In the beginning of this year S.B. Dissanayaka, President of the Inter-University Students' Council was elected to the University's Board of Governors. He, however, ceased to function because he took his final year examination from Vidyodaya Campus in May 1975. A 3-man University Grants Committee is also to be set up soon. The powers and functions of the campus presidents will also be defined as soon as the University Law is amended, it was said.

Ragging in Colleges



"The only 'rags' that we know of here, is what we're dressed in"

**Testifying before the Ragging Commission**, Prof. M.P. Perera, a former President of the Vidyasakara Campus described the role of a Campus President as that of a "forwarding agency" or a "mere rubber stamp." Amendments to the University Law will also provide a Board of Discipline at the University as well as at each campus. Under the new law, the Vice-Chancellor, campus presidents and deans will be selected by the Education Minister and not through election by secret ballot.

### **AIACHE Establishes Research Centre in Higher Education**

THE All India Association for Christian Higher Education has set up a Research Project aimed at innovative experiments in Higher Education. The Kerala Centre has been established with this purpose. Besides the other projects, the Centre would encourage experiments in education for life, education as an agent of social justice and employment-oriented education.

**Rev. Dr. P. T. Chandi**, former Vice-Chancellor of Gorakhpur University has been appointed the Director of the Centre. Prof. Samuel Mathai, former Secretary of the Inter-University Board and University Grants Commission will be one of the advisers. Prof. K.N. Raj, former Vice-Chancellor of Delhi University and Dr. M.M. Ghani, former Vice-Chancellor of Calicut University would also be associated with the activities of this Centre.

Prof. Mathai feels that the various challenges faced by the universities and colleges especially with regard to the question of autonomy would have a priority in the plan of action of the Centre. The Centre would also act as a catalyst for stimulating experiments in education. There is a proposal to bring out occasional news-letters giving information about new developments in educational theory and practice in India & abroad. The centre has been established initially for a period of two years.

### **Uttar Pradesh move to tone up Higher Education**

THE Uttar Pradesh government has taken various decisions to tone up higher education. The admission in universities now onwards would be strictly on merit. The examination schedules of universities and colleges would be rigidly adhered to and drastic steps would be taken against use of unfair means in examinations. Students failing for two consecutive years at an examination will not be admitted for the third time. The capitation fee has been banned and declared an offence under Section 46 of the U.P. Universities Act.

Immediate action is to be taken on complaints of ragging by senior students and against those educational institutions from where persistent complaints are received. The admissions to hostels are also to be made on the basis of marks obtained in last examination. However active participation in sports and extra curricular activities by students would be given proper weightage. Universities and degree colleges have been further advised by the Government to ensure that students with doubtful conduct or those against whom cases are pending in courts should not be given admission. The government is also contemplating to provide more amenities to students and teachers of universities and colleges.

### **Futurology Report by January, 1976**

DR. S. C. SETH, Member Secretary of the National Committee on Science and Technology in a statement to the Press announced that the panel of 'futurology' is expected to give the first 'trend report' by January, 1976.

The 13-member panel constituted by the Government of India, includes top scientists and technologists of the country. It is expected to give 'a package of alternatives' to sort out problems of science, technology and indus-

try which would be facing the country in future. The panel's research would cover not only energy generation and its need, food, transport, communications, urbanology but would also give adequate attention to the problems of slum clearance, rural development and life styles in rural India's housing, management and education. The panel would review the existing process of technology assessment and decision-making and their trends to suit Indian conditions and would prepare a report on technology assessment. It would also prepare monographs and reports in applied fields of future research perspectives in selected areas to serve as backgrounders for policy-makers in different organisations in the Government of India. The panel would encourage and stimulate future consciousness and concern for future among universities and other institutions of advanced learning in the country.

### **Urology Research Centre**

THE Sawai Man Singh Hospital at Jaipur will soon develop the country's first modern research centre 'Urology' and start doing trans-urethral surgery for prostate and bladder cancer. The Rajasthan Government has announced a grant of Rs. 3.5 lakhs for this project. A Bombay Charitable trust has undertaken to donate a similar amount for this purpose.

Dr. Milner, Professor and Head of the Department of Urology at the Albany Medical Centre, New York was the guest surgeon at the centre. He performed a number of prostate operations during his brief stay. Rajasthan has the largest record of stone cases in the country.

### **New guidelines for Delhi Colleges**

THE Delhi University recently changed the provision for the selection of trust nominees on the governing bodies of colleges including those controlled by Delhi Administration. The follo-

wing new guidelines have been suggested :

(1) The trust should forward a panel of names to the university containing at least fifty per cent more names than the required number : (2) Persons recommended in the panel should be those who have demonstrated interest in education or had made significant contributions in promoting the cause of higher education : (3) Ordinarily not more than two members of the same family should be nominated as governing body members : (4) At the time of renomination his attendance in governing body meetings in previous years should also be taken into consideration : (5) If a person is a student of the university or an employee of the university or a member of the Executive Council or a near relative of an employee of the institution concerned, he would be disqualified for nomination.

The new proposal would be implemented from the coming year.

### Saurashtra Changes Examination System

The Saurashtra University discontinued the internal evaluation system of examination in the faculties of Arts, Science and Commerce as a sequel to the recent mismanagement in the Controller's office. It has been decided to have papers in all subjects for full 100 marks at the university level. Under the internal evaluation system, two tests were held at the college level—one before terminal vacation and the other after terminal vacation—of 20 marks each. It was later discovered that the internal evaluation system had led to malpractices on a large scale. The university has therefore recommended to the affiliated colleges to hold the terminal and preliminary examinations which were being held before the internal evaluation system was introduced. This system of holding terminal and preliminary examinations would help the university

to judge the standard and progress of students in a better way in the prevailing situation.

The university has now set up a high-powered committee to examine the entire structure of examinations and ways and means to bring about the necessary changes. The committee is expected to submit the recommendations by the end of October.

The university is also proposing to re-organise the tutorial system to provide better facilities to the students appearing for various examinations.

### Poona Varsity to have a Computer

A Rs. 60 lakhs computer would be soon installed in the Poona University. The University Grants Commission has given the necessary sanction, for this project. The computer will not only benefit the university students and teachers throughout the Maharashtra State but will also help the research personnel of national laboratories and other industries in this area.

The cost of the computer would be shared by the National Chemical Laboratory and the College of Engineering of the University. The university is planning to put the computer in use for the university examination system. Industries would be able to use the computer for management information system, operation research and engineering design on payment of service charges.

The University Grants Commission has also approved two other projects under the Indo-British Universities collaboration for advance research in nuclear Chemistry and microtron accelerator and position and electron physics. The University Grants Commission would also be assisting the university in the development of its national science programmes. A liquid nitrogen plant from Holland will be imported at a cost of Rs. six lakhs.

### New Courses in Tourism at Madurai Varsity

THE Academic Council of Madurai University has decided to introduce a new degree course and a postgraduate diploma course in Tourism from this academic session. The Department of Mathematics has opted for the semester system and with the inclusion of this course almost all the courses at postgraduate level had been brought under semester system in the university.

The university has also decided to re-introduce the central evaluation of answer books from next year. The results of the university examinations will be computerised. This would enable the authorities to announce the results on time with accuracy and secrecy.

Mr. Chittibabu, Vice-Chancellor of the University, proposes to launch a new plan of action for the remaining years of the Fifth plan period to give depth, variety and intensity to various courses of study. He hopes to set up a Rs. 40 lakhs Science Education Center in three-year programme with the maximum of the university. The centre would be a kind of aid to everybody from elementary school to the university level providing diverse facilities for multifarious interests. It would be a clearing house for exchange of ideas and would help keep the university in touch with the community. The restructuring of the courses of study of B.A. and B.Sc. to make them work-oriented will form another important programme. New courses for education and library science would be given proper attention. The National Service Scheme under the Directorate of Youth Welfare would embrace forty-eight colleges this year.

The enrolment of the students for the Correspondence courses has shown an increase from 15000 to 19000. The Institute of Correspondence Courses and Continuing Education has done useful work. The university would soon be collaborating with Madras University in the organisation of

correspondence courses at that campus. The All-India Radio at Madras is being requested to resume their broadcast programmes for university students on a regular basis.

### Kerala Varsity 3rd Generation Computer

THE University of Kerala plans to have the third generation modern computer with the UGC assistance. It is expected to cost a sum of Rs. 20 lakhs to the university. After installation, Kerala would be providing the biggest computer facilities available at any of the southern university campuses.

Dr. R.S. Krishnan ever since his appointment as the Vice-Chancellor of the university had been keen for the establishment of a computer centre for the university. The Educational Computation Centre was inaugurated in March 1974 by Mr. Achutha Menon, Chief Minister. The University acquired a second generation IBM-1620 computer which was loaned by the Indian Space Research Institute. It is being shared by the State Government, the Centre for Development Studies, the Engineering College and university departments.

After the installation of the new computer it would be possible for the university to extend this facility to research workers in the neighbouring universities as well. The research and developmental activities of Kerala University were severely handicapped all these years for want of a fast digital computer system.

Professor Krishnan dispelled the fears of those who thought the computers would reduce job opportunities in the university. The use of computers has opened up many developmental avenues and job opportunities. The computers in the modern are play a vital role in scientific and industrial process control. They also help in decision making. The university would be starting a course in Computer Science in the very near future.

### UPSC Proposal for National Merit Examination

THE Union Public Service Commission has forwarded a proposal to the Government of India and Planning Commission to hold a national merit examination and set up a data bank with a view to minimising wastage in higher education. The UPSC held various consultative sessions with the Education Ministry, the University Grants Commission, the Association of Indian Universities and other authorities in this regard. It is strongly felt that the proper approach towards examinations has to undergo a basic change to facilitate placement of students particularly scientists and technologists. The Commission is planning appropriate changes in its examinations which would be directed to 'test not only knowledge but also to interpret complicated phenomena and apply knowledge to the solutions of practical problems.

Prof. A.R. Kidwai, Chairman of the Commission has decided in the first instance to create an examination reform cell in the UPSC Secretariat. A standing committee of experts has also been appointed to advise the commission on the latest developments in methods and techniques of the examination. It is also proposed to have a data bank which would be useful in the present circumstances with the increasing specialisation in all fields of knowledge and activities. It is necessary to identify the most suitable persons for specific jobs. The formation of the data bank would minimise the wastage of lot of time in locating such persons in the scientific and technical fields and various other disciplines. Through a computerised data bank it should be possible for recruiting organisations to identify the most suitable persons by matching the requirement of posts with the available personnel. The bank will compile and store information regarding the major specialities with which government departments, public undertakings, private industries, universities and research institu-

tions are commonly concerned. The bank would be useful for identifying persons for appointments to various posts as well as for locating specialists for short-term assignments as consultants for research and development projects and members of expert committees and task forces.

The concept of a single examination for various services has been based on a survey which revealed that even well-qualified graduates took about one to three years before getting suitable employment. In view of the huge turn over of scientific and technical graduates every year and the time and money spent on their education the Commission feels that this "waiting is a colossal wastage of manpower and resources. A suitable employment-oriented scheme may be evolved to enable students to get suitable employment soon after completion of their course on the basis of one application and through a single competitive examination." The suggestion of the Commission were endorsed at the recent conference of the Chairmen of various State Public Service Commissions. The idea to have national agency to conduct examination tests on the basis of uniform standards to enable students to secure jobs quickly on the basis of a single examination was approved. The national merit examination would be open not only to university graduates but also to those who have acquired knowledge through correspondence or even self-education. This step would further help in reducing the rush on the universities and check deterioration in falling standards as well as reduce the tensions and anxieties of the educated youth.

Thus a candidate can expect to get jobs soon after graduation by appearing at a single examination without bothering to apply for similar posts in different organisations and repeatedly competing in examinations, tests and interviews. Moreover the availability of a large number of jobs on the basis of single examination will generate considerable interest and provide in-

centive and a sense of purpose in their studies. The national examination will also serve as a national index of performance and achievements in various fields of learning and set the pace for raising standards of education.

### **Calcutta Varsity for Controlling Medical Institute**

THE Calcutta University has proposed to the State Government to transfer the academic control of the Institute of Postgraduate Medical Education and Research to the University. There has been a proposal for quite some time to integrate this institute with the University College of Medicine. The university authorities feel that the academic integration of these institutions under the same umbrella would be beneficial to the postgraduate medical students as they would have better clinical facilities and practical training. The University is not interested in exercising any administrative control over the hospital. This should be managed by the State authorities as in the case of other Government Medical College hospitals. The Vice-Chancellor would be meeting the State Health Minister to discuss the matter further.

### **Free Education Concession Extended**

THE Andhra Pradesh Government has decided to extend the concession of free education till-now available in medical and engineering colleges for students whose parents income does not exceed Rs. 1000/- per month to the College of Agriculture as well. The Government also proposes to grant stipends to postgraduate students of agriculture as was being done in the case of medical and engineering students. Financial implications of the proposal are being worked out separately.

### **Osmania Adopts Early Retirement Order**

OSMANIA University Syndicate has adopted the government order

regarding retirement of employees before their reaching age of retirement. The adoption of the order would however be without prejudice to the authority vested in University in terms of the contract executed by the university teachers or officers which requires three months notice for termination of service.

### **Examination of 4000 Cancelled**

CALCUTTA University cancelled the examinations of over 4000 students who had appeared for the degree, law, medical and engineering examinations last year either fully or partly, on charges of malpractices.

The university in such cases awards the punishment for adopting unfair means on the basis of reports submitted by the visiting teams sent by the University authorities to different examination centres. Those punished included three medical, one engineering and one law student.

### **Special Calicut Convocation**

THE University of Calicut held a special convocation on September 26, 1975 for conferring honorary degrees of D. Litt on Prof. M. M. Ghani, the first Vice-Chancellor and Mr. K.P. Kesava Menon, Chief Editor, Mathrubhoomi.

The University has resolved not to hold regular convocations but special convocations would continue to be held for conferring honorary degrees.

### **Gauhati University Amendment Bill Passed**

THE Assam Assembly today passed the Gauhati University (Amendment) Bill, 1975 to incorporate the recommendations of the Gajendragadkar Committee set up by the University Grants Commission on the governance of the Universities in the country.

The Bill provides that "the Chancellor as head of the University shall have the power to

suspend the activities of the various authorities of the University as and when circumstances so demand and vest all powers and functions of these authorities in the Chancellor to control the affairs of the authority or authorities so suspended in such manner and for such a period as deemed fit and reasonable by him".

There shall be a selection Committee for making recommendations to the Executive Council for appointment of Professors, Readers, Lecturers, Registrar, Treasurer, Librarian and other Officers of the University as may be provided for by the Statutes consisting of the following members:

The Vice-Chancellor as Chairman of the Committee; three persons not holding any office of profit under the University of whom one nominated by the Chancellor, one to be nominated by the State Government and the other to be nominated by the Executive Council, the Registrar shall be the member-Secretary of the Committee except for the Selection for appointment of Registrar in which case the Vice-Chancellor shall nominate one person as member-Secretary in consultation with the Executive Council.

It further provides that there shall be a Students' Advisory Council which shall consist of the following members:—One Chairman to be nominated by the Vice-Chancellor from amongst the teachers of the University, the Director of Students' Welfare-ex-officio Treasurer; President, Vice-President and Secretary of the University Post-Graduate Students' Union; President and Secretary of the University Law Students' Union; 10 students from ten affiliated Degree College to be selected by the Executive Council by rotation in the manner to be prescribed by the Statutes; one student from each teaching faculty of the University to be elected as prescribed by the Statutes, five students one from each of the five activities, namely, Sports, National Service Scheme,

National Cadet Corps, Cultural activities, and National Discipline Scheme to be nominated by the Vice-Chancellor, four lady students to be nominated by the Vice-Chancellor, the Director of Sports and Physical Education, if any. The members of the students Council shall elect from amongst themselves, the Secretary of the Council.

Another provision of the bill states "if at any time it appears to be necessary and expedient in the opinion of the State Government, the State Government may with the prior consultation with the Chancellor, by a notification published in the official Gazette, suspend all or any of the powers of the University as prescribed in Section 5 of the Gauhati University Act and other powers as may be ancillary to such powers of management, functions of such authorities or officers including holding conduct and superintendence of and arrangement and appointment of any person or authority in connection with any or more examinations or publication of the result of any such examination or examinations or to any matter incidental thereto for such period as may be specified in the notification and may be exercised by the State Government if and when necessary during such period, in such manner and through officers of authority as may be considered fit by the State Government."

The bill also provides that "The Vice-Chancellor shall be appointed by the Chancellor on recommendation of an Advisory Board constituted by the Chancellor for the purpose and consisting of three members of whom one member shall be elected by the Executive Council, one member shall be nominated by the State Government and one member shall be nominated by the Chancellor. The Chancellor shall appoint one of them as Chairman of the Advisory Board." The Advisory Board shall recommend a panel of names of three persons to the Chancellor who may appoint one of the persons recommended to be

Vice-Chancellor. If the Chancellor does not approve any of the person recommended by the Advisory Board he may call for a fresh recommendations".

### National Seed Project

DR. D. P. SINGH, former Vice-Chancellor of G. B. Pant University of Agriculture & Technology, who is the current Chairman of the National Seeds Corporation, had led the India World Bank Joint Working Group on the National Seeds Project. The

an immediate launching of the Project which is estimated to cost Rs. 120 crores. The Project is expected to be the biggest and the best seed organisation in the world outside the United States.

The World Bank which was associated with the preparation of the project report has agreed to provide 50% of the total investment cost. There would be a serious attempt to develop a broad based, decentralised net work of seed production agencies throughout the country which would be capable of meeting the require-

## PERSONAL

Dr. S. Chandrasekhar, demographer, economist, and noted population scientist has been appointed Vice-Chancellor of Annamalai University for a period of three years.

He has been the Union Minister of State for Health and Family Planning for several years. He is presently Visiting Professor at the California State University.

x x x

Dr. R.S. Jogi has taken over as Vice-Chancellor of the Himachal Pradesh University.

x x x

Mr. A.K. Dhan member of the Union Public Service Commission has been appointed Vice-Chancellor of Ranchi University

x x x

Dr. R.L. Kaushal has been appointed Vice-Chancellor of Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur.

x x x

Dr. H.K. Baruah has been formally appointed Vice-Chancellor of Gauhati University.

x x x

Shri S.V. Chavan has taken over as Vice-Chancellor of Konkan Krishi Vidyapeeth.

x x x

Dr. J.N. Singhal has been appointed Registrar of Rohilkhand University.

Shri G.S. Sharma has taken over as Registrar of University of Udaipur.

x x x

Shri B. Murugan has been appointed Registrar of Madurai University.

x x x

Dr. L. P. Agrawal, Chief Organiser of the Rajendra Prasad Centre for Ophthalmological Sciences has been appointed Honorary Adviser in Ophthalmology in the Directorate General of Health Services. Government of India for implementation of a national programme for the prevention and control of blindness.

x x x

Prof. M.G.K. Menon, FRS, Secretary to the Government of India, Department of Electronics and a former Director, Tata Institute of Fundamental Research, Bombay, has been appointed as one of the twenty-four members of the United Nations Advisory Committee on the Application of Science and Technology to Development for 1975

x x x

Dr. C. Gopalan, Director-General of Indian Council of Medical Research has been elected President of the International Union of Nutritional Sciences for a term of three years.

Group in its report to the Planning Commission and the Ministry of Agriculture has recommended

ments of certified seeds for the planned agricultural production programme in the coming years.

The programme would provide full support to all the facets of seed production from the multiplication of breeder seed by the research stations to marketing agencies. The seed production would be entrusted to a number of state seed corporations in compact areas which are agro-climatically favourable for high quality, low cost seed production. These would be organised with seed growers participating as shareholders in the Corporations. Dr. Singh hopes that within four years seeds of agricultural corporations would be available at Bullock Cart distance in villages

### PAU Research Station

THE Punjab Agricultural University Regional Fruit Research Station at Abohar is doing commendable work to save the precious foreign exchange now being spent on importing dates from Iran, Iraq and Muscat. The date growing areas were mostly located in the districts now in Pakistan. This created a problem for the country after independence. Realising the importance of date cultivation, the regional fruit research station of PAU took up this problem. The arid irrigated areas of northern region are now being used for date palm growing.

Recently, a team of UNDP and FAO experts visited the Abohar station to explore the possibilities of extending further assistance. Under the Research agreement the station will get 2000 date off-shoots by March, 1976. Each off-shoot would cost fifty dollars. The agreement would be initially for a period of five years.

The centre is, however, very much handicapped for want of proper services of an entomologist and a plant pathologist. It is hoped that as soon as the new plants are made available to the university, it would extend the services to places like Bhatinda, which hold great promise for date palm growing.

### Liberalized Rules for Delhi University

THE Executive Council of Delhi University has recently approved the amendments to leave rules which will enable the teachers of Delhi University to avail earned leave in addition to the vacations. They will now onwards be entitled to 12 days earned leave for every year of service. They will also be entitled to additional leave for one third of the vacation if they do not choose to avail it.

A provision for sabbatical leave has also been made. After the approval of the U.G.C., university teachers who has completed 'approved service for six years' will be entitled to one years sabbatical leave. No one will however be permitted to avail such leave for more than two times in his career. The teachers would also be entitled to 'study leave' after two years of service instead of three years as at present. During this period they would draw their salary minus allowances for the first two years and half pay for the third year. If a teacher gets a fellowship in a foreign university amounting to more than \$ 10,000 a year, he will not be allowed to draw his salary. The Vice-Chancellor may, however, allow the teacher to draw his allowances during study leave as a special case. The leave rules also provide for extraordinary leave without pay. The new rules will bring the teachers of Delhi University at par with those of Jawaharlal Nehru University.

These rules however are yet to be approved by the University Grants Commission.

### Environment Research

THE national committee on Environmental Planning and Coordination has set up two committees-Environmental Research Committee (ERC) and the Indian National Man and Biosphere Research Committee (MAB). The two committees

will assist the Department of Science and Technology in sponsoring and supporting research work in various areas of environmental concern.

These committees will recommend the choice of disciplines and specific fields for further studies and also advise the department on grants for each research project. They will also evaluate the progress of each project. Fourteen specific project areas relating to the effects of man's activities on the biosphere have already been started. Some of the fields in which the work is yet to be initiated is—environmental aspects of rural and urban settlements, natural resources, management, pollution and environmental training and education.

### Geologists Exam Scheme Rationalised

The Scheme of the Geologists Examination conducted by the Union Public Service Commission has been rationalised. The new scheme, consisting of a written examination followed by Interview for Personality test, will be introduced from the examination to be held in June 1976 by the Commission.

The new system of examination will have two schemes one for posts of Geologists in the Geological Survey of India and the other for the posts of Hydrogeologists in the Central Ground Water Board. Each scheme will have six papers including English and General Knowledge. Five of the compulsory subjects are common and candidates competing under both the schemes will have to offer only seven subjects including English and General Knowledge. The subjects under the revised scheme examination and their detailed syllabi have been drawn up in consultation with academic experts keeping in view the current teaching programme in various Universities and Service requirements.

## CLASSIFIED ADVERTISEMENTS

### UNIVERSITY OF DELHI

Advt. No. Estab. IV/28/75.

**APPLICATIONS** on the prescribed form are invited for the following posts:—

Sr. No.	Department	Designation
1.	University College of Medical Sciences.	(i) One Professor of Bio-chemistry (ii) One Professor of Physiology
2.	Botany	One Reader
3.	Physics & Astro-physics	One Reader
4.	African Studies	One Lecturer in Economics
5.	Arabic & Persian	One Lecturer in Arabic
6.	Faculty of Management Studies	Two Lecturers
7.	Operational Research	Two Lecturers (One Temp. upto 19.8.1976) University Engineer
8.	Engineering Department	One Professional Assistant
9.	Faculty of Music & Fine Arts	(i) One Professional Assistant (ii) Two Console Operators (One each reserved for Scheduled Caste & Ex-servicemen)
10.	Computer Centre	One Junior Lab. Assistant (Reserved for Scheduled Caste) One Field Attendant
11.	Zoology	Two Pharmacists (One reserved for Scheduled Caste)
12.	Geology	(i) Stenographers (ii) Steno-typists
13.	W.U.S. Health Centre	
14.	Central Office	

**The Scale of Pay of the posts are:—**

1. Professor in Bio-chemistry & Physiology:	Rs 1500-60-1800-100-2000-125-2500 Plus Non-Practising Allowance of Rs. 500 - p.m. for those having medical qualifications and subject to such revision as may be decided by the U.G.C.
2. Reader	Rs. 1200-50-1300-60-1900
3. Lecturer	Rs. 700-40-1100-50-1600
4. University Engineer	Rs. 1100-50-1600
5. Professional Assistant	Rs. 250-15-400 (Likely to be revised)
6. Console Operator	Rs. 550-25-750-EB-30-900.
7. Stenographer	Rs. 425-15-500-EB-15-560-20-700.
8. Steno-typist	Rs. 330-10-380-EB-12-500-EB-15-560.
9. Pharmacist	Rs. 330-8-370-10-400-EB-10-480.
10. Jr. Lab. Assistant	Rs. 260-8-300-EB-8-340-10-380-EB-10-430.
11. Field Attendant	Rs. 210-4-250-EB-5-270.

All the posts carry D.A., C.C.A., H.R.A. and retirement benefits (in the case of permanent incumbents) as admissible under the rules in force from time to time.

#### I. ESSENTIAL QUALIFICATIONS FOR:

##### 1. i) Professor of Bio-chemistry:

M.B., B.S., M.D. (Bio-chemistry)/ M.Sc. (Medical Bio-chemistry)/ Ph.D./ D.Sc. (Bio-chemistry).

##### Teaching/Research Experience:

As Associate Professor/Reader in Bio-chemistry for 5 years in a Medical College.

##### (ii) Professor of Physiology:

##### M.B., B.S., M.D./M.Sc./Ph.D /D Sc. in Physiology

##### Teaching/Research Experience:

As Associate Professor/Reader in Physiology for five years in a Medical College.

##### 2 Readerships

Good academic record with first or high second class Master's Degree in the subject concerned with a Doctor's Degree or equivalent published work.

Independent published work (in addition to the published work mentioned above) with a least 5 years' teaching experience in Honours'Post-graduate classes essential.

#### 3. Lectureships:

Consistently good academic record with a First or high Second Class (B+) Master's Degree or an equivalent degree of a foreign University in the subject concerned.

#### Desirable: (in order of preference)

(i) A Doctor's Degree or Evidence of research work of equivalent standard in the subject concerned.

(ii) Teaching experience of Degree/ Post-graduate Classes.

Provided that if a teacher is not a Ph.D at the time of his/her appointment and does not qualify himself/herself for the award of a Ph.D. Degree from a recognised University in the subject which is being taught by him/her within the period of five years from the date of his/her appointment or does not give evidence of research work of equal standard within that period in the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements

#### 4. University Engineer:

Graduate in Civil Engineering from a recognised University, possessing good working knowledge of Electrical Engineering.

Atleast 15 years' experience in R.C.C. design, cost estimation, and in designing, constructing and maintaining buildings, roads and utility services like water supply, sanitary gas and electrical installations and sewage system.

Capable of handling electric motors, pumps, fluorescent tube lights, window type air-conditioners, electric geysers and coal fired hot water supply systems.

Must have at least 10 years administrative experience in responsible posts. Should be conversant with contract law and P.W.D. accounting procedure.

#### 5. Professional Assistants in Music & Computer Centre:

i. First or Second class B.A./B.Sc.; B.Com., or First Second Class Master's Degree, and

ii. First or Second Class B. Lib. Sc. or First or Second Class Post-graduate Diploma in Lib. Sc.

#### 6. Console Operators in Computer Centre:

a. Atleast a Second Class ((50% marks in the aggregate) Master's degree in Mathematics, Statistics, Econometrics, Operations Research or Physics;

**OR**

Atleast a Second Class (50% marks in the aggregate) Bachelor's degree in Engineering from a recognised institution; and  
**b.** Familiarity with Console Operation.

**7. Junior Laboratory Assistant in Zoology:**

Metric or equivalent examination with Science subjects.

**8. Field Attendant in Geology:**

Middle Pass Robust constitution, competence to walk in hilly terrain for long distances and bear rigorous field life.

**9. Pharmacists in Health Centre:**

Metric or equivalent. Must have passed Pharmacist's (Compounder) Course from a recognised Institution and must be a registered Pharmacist. Two year's experience in the profession is desirable

**10. Stenographers**

Atleast Matriculation Minimum speed 120 w.p.m. in Shorthand and 40 w.p.m. in English type-writing.

**11. Steno-typists**

Matriculation with proficiency in typewriting (about 35 w.p.m.) and proficiency in Shorthand at 80 w.p.m.

**Note:** Candidates for the posts of Stenographers and Steno-typists, will be required to appear and qualify in the tests to be held by the University in General English, Shorthand and Type-writing.

**II. Special/Desirable Qualifications for:**

**1. Readership in Botany:**

Specialization preferably in one of the following areas: Algology, Hydrobiology, Cell Biology, Histochemistry, Embryology, Taxonomy, Ecology, Genetics, Physiology, Anatomy or Morphogenesis.

**2. Lecturership in Economics in the Department of African Studies**  
**i.** Research work on problems of African Economics.

**ii.** Knowledge of any African Language.

**3. Lecturership in Arabic:**

Should be able to teach Modern Arabic.

**4. Lecturerships in Management Studies**  
**Specialisation in (i)** Business Policy, or International Marketing, or Financial Management, or Materials Management or Business Law, or Accounting, or Office Management. For persons specializing in Accounting, candidates with Chartered Accountancy or specialization in Cost Accounting may be given preference.

(ii) Familiarity with case methods of instruction, training in other modern methods of instructions in Management, training abroad in the field of Management, experience of teaching at Post-graduate level in Management Courses, or practical experience either in Business or in consulting firm will be additional qualifications

**5. Lecturership in Operational Research (For one permanent post)**

Specialization in one of the following topics: (a) Inventory (b) Marketing (c) Computer Programming

**6. Professional Assistant in the Faculty of Music & Fine Arts:**

- i. Good knowledge of Indian Music, preferably with a Degree or Diploma in Music;
- ii. Experience of handling electronic equipment, magnetic tapes and disks.

**7. Professional Assistant in the Computer Centre:**

- i. Knowledge of one of the computer languages with some experience of programming;
- ii. Experience of handling magnetic tapes, magnetic disks and other computer input-output media as also experience in different library operations.

**8. Console Operators in Computer Centre:**

Knowledge of the elements of Computer Programming.

**9. Junior Laboratory Assistant in Zoology:**

Experience of working in a Science Laboratory.

**10. Field Attendant in Geology:**

Should have some laboratory experience

Age preferably below 25 years

The prescribed application form can be had from the Information Office of the University either personally or by sending a self-addressed envelope (5"x11") with postage stamps worth Rs. 1.95.

Selected candidates will have to produce the original documents relating to their age, qualifications, experience, etc. before joining the appointment

Application (separate for each post) accompanied by attested copies of Degrees and other certificates and published research articles, etc. should reach the undersigned not later than 16th October, 1975.  
**Note:**

1. It will be open to the University to consider the names of suitable candidates who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases in respect of all posts on the recommendations of the Selection Committee.

2. Convassing in any form by or on behalf of the candidate will disqualify.
3. Candidates from outside Delhi for the posts of Professors, Readers and Lecturers called for interview will be paid contribution towards Travel expenses equivalent to 1½ 2nd Class Rail Fare as per the Rules.
4. Certain percentage of posts in the cadres of Non-teaching posts are reserved for Scheduled Caste Tribes and Ex-servicemen
5. Those who had applied in response to the earlier advertisement for the posts of Readers in Botany and Physics & Astro-physics need not apply again, but in case they have any additional information to supply, they may do so.

Sd/-  
**REGISTRAR**

**INDIAN INSTITUTE OF TECHNOLOGY KANPUR  
 IIT POST OFFICE  
 KANPUR**

Advertisement No. 26/75

IIT Kanpur is one of the five Institutes of national importance set up by the Government of India in 1960. It has about 1200 undergraduates and 800 Post-graduates on its rolls. Undergraduate Programme offers training in six different fields of engineering and Post-graduate Programme prepares for a higher degree in these engineering subjects as also research programme leading to Ph. D degree in engineering, sciences and humanities. It is located on a self-developed campus having community facilities like primary and Secondary schools, a Health Centre, shopping Centre with a bank, post office etc.

The Institute is looking for a person of wide experience for the post of Registrar for the Institute

**Job description:** Secretary to the Board of Governors and the Senate, overall responsibility of the office related to the administration of the Institute including recruitment, promotion and discipline of the staff

**Qualifications and Experience**

(i) Essential—(i) a University degree (ii) minimum 10 years of experience in a responsible supervisory administrative position in a Government educational or research Institute/Commercial houses of national standing.

(ii) Desirable—Postgraduate degree or diploma in public Administration or Management.

**Pay Scale** —Rs. 1500-60-1800  
**Age** —upto about 50 years.

The post carries allowances according to Institute rules which at present correspond to those admissible to Central Government employees stationed at Kanpur. Higher initial pay is admissible to a highly qualified and experienced person. The Selection Committee may relax any of the above requirements for the post in an exceptional case.

Appointment will be on contract basis initially for a period of 5 years. Deputation on foreign service terms will be acceptable. The incumbent will be entitled to join the Institute's Provident Fund as applicable and other benefits such as housing, medical care etc. as admissible to other regular employees of the Institute.

Other things being equal, preference will be given to Scheduled Caste/Scheduled Tribes candidates.

Applications should be made on prescribed forms obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm. x 10 cm size. Names of three persons who are fully acquainted with the professional experience and character and nature of the applicant may be given so that a reference could be made. Applications accompanied by a postal order for Rs. 7.50 (Rs. 1.87 for SC/ST candidates) should reach Registrar, Indian Institute of Technology Kanpur, IIT Post Office, Kanpur - 208016 not later than October 18, 1975.

Note:- Those who applied in response to Advt. No. 2075 need not apply again.

#### UNIVERSITY OF JODHPUR (Establishment Branch)

Advertisement No. 775

APPLICATIONS to reach the undersigned by October 18, 1975 are invited for the following posts:-

1. PROFESSORS in Hindi, Geography, Philosophy, Law and English  
Scale: Rs. 1100-50-1100-60-1600.

2. READERS in English, Economics, Political Science, Sanskrit, Philosophy, Chemistry, Zoology, Botany, Law, Commerce, Civil Engineering, Mining Engineering, Mechanical Engineering, Electrical Engineering (Temp.) and Structural Engineering (Temp.).  
Scale: Rs. 700-50-1250.

3. RESEARCH FELLOW in Commerce  
Scale: Rs. 350-25-600.

4. DEMONSTRATOR in Chemistry  
Scale: Rs. 275-20-375-25-650.

5. STENOGRAPHER  
Scale: Rs. 170-10-210-15-390.

6. ARTIST for Botany Department  
Scale: Rs. 150-8-190-10-210-15-330  
Posts carry allowances and other benefits as may be admissible under the rules of the University from time to time.

For qualifications and other details and the prescribed application form please apply sending crossed postal order for Rs. 2/- (Rupees two only) in favour of the Registrar, University of Jodhpur, Jodhpur along with a self-addressed envelope of 24x11 cm. bearing postage stamps of 85 paise. Those who had already applied for any of the above posts in response to advertisement No. 4/74 or any other advertisement for which detailed mentions were made in advertisement No. 4/74 need not apply again.

S. CHAKRABARTI  
REGISTRAR

Higher start may be given for special qualification and experience. Candidates interviewed may be paid contribution towards their T.A. equal to one single second class railway fare only.

Those who have Applied in Response to earlier Advertisement need not apply again but in case they have any Additional Information to supply, they may do so.

(P.V. George)  
REGISTRAR

#### ALIGARH MUSLIM UNIVERSITY

Advertisement No. 13/75-76.

APPLICATIONS on the Prescribed form are invited for the Following Posts of Lecturers in the Scale of Rs 700-40-1100-50-1600 Plus Allowances:-

Lecturers in—Urdu, English, Arabic, Persian, Marathi, (Hindi Deptt.) French, (English Deptt.), Sociology, Pol. Science (Department & Women's College both), Education (Women's College), Zoology, Botany, and Business Management

Qualifications Ordinarily Required:-

Essential.—Consistently good academic record with first or high second class (B+) Master's degree in the subjects concerned or equivalent foreign qualification.

Desirable:—(1) Doctor's degree or published work of an equally high standard (2) Teaching experience of Degree/Post-Graduate classes

Provided that if a teacher is not a Ph.D. at the time of his/her appointment and does not qualify himself/herself for the award of a Ph.D. degree from a recognised University in the subject which is being taught by him/her within the period of five years from the date of his/her appointment or does not give evidence of research work of equal standard within that period in the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements.

The above posts were advertised earlier in the scale of Rs. 400-40-800-50-950 plus allowances, with the following qualifications:—

"Atleast a first or high second class Master's degree or equivalent foreign qualification."

Prescribed application forms & Instructions may be had from the Dy. Registrar (Ex.) by sending self-addressed envelope of 23 x 10 cm. Last date for receipt of applications is 15th October, 1975. Incomplete applications and those received late may not be considered.

#### SAMBALPUR UNIVERSITY JYOTI VIHAR · BURLA

Advertisement No. 28564/TDS

Dated 23-9-75

#### WANTED

Name of Post	—One Lecturer in History
Nature of the post	—Permanent
Scale of pay	—400-40-800-50-950
Age of retirement	—Sixty years

1. Essential Qualification:—At least a second class Master's Degree with 48% of marks

2. Desirable Qualification.—Teaching and Research experience: The post carries usual dearness allowance as would be sanctioned by the University from time to time.

Seven copies of the application form will be supplied from the University Office to each candidate in person on cash payment of Rs. 2/- (Rupees two) only. Candidates intending to receive forms by post are required to send (a) Crossed postal order of Rs 2/- payable to the Finance Officer, Sambalpur University, Jyoti Vihar, Burla (b) a self addressed envelope (23 cm. x 10 cm) with postage stamps worth Rs. 2/- affixed to it with the word "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money order/Cheque will not be entertained. The last date of receipt of application in the University Office, at Jyoti Vihar, Burla is 11.11.1975

The candidates will be required to appear for an interview before a Selection Committee at their own expenses.

All communications should be addressed to the Registrar by designation only

Sd/-G. P. Guru  
REGISTRAR.

## LUCKNOW UNIVERSITY

Advertisement No. 9, 1975

APPLICATIONS are invited for the following posts:

1. One Professor of Zoology, in the grade of Rs. 1500-60-1800-100-2000-125-2500.

Qualifications:

**Essential:** First or High Second class (B+) Master's Degree and Doctorate in the subject concerned with a consistently good academic record, experience of teaching post-graduate classes for not less than seven years and/or having conducted and successfully guided research work for seven years in a recognised institution, and having published work of high standard in the subject concerned.

**Preferential:** High academic distinctions.

Readers in the Grade of Rs. 1200-50-1300-50-1600.

2. Two Readers in Chemistry
3. Two Readers in Geology
4. One Reader in Zoology

Qualifications:

**Essential:** First or High Second Class (B+) Master's Degree and Doctorate in the subject concerned with a consistently good academic record and experience of teaching post-graduate classes for not less than five years and published research work of high standard in the subject concerned. For one post of Reader in Geology, preference will be given to a candidate having contribution in any branch of Petroleum Geology.

**Preferential:** Experience of teaching post-graduate classes and guiding research.

Lecturers in the Grade of Rs. 700-40-1100-50-1600.

5. One Lecturer in Military Science
6. One Lecturer in Statistics
7. Two Lecturers in Zoology

Qualifications:

**Essential:** Doctorate in the subject of study concerned or a published work of a high standard in that subject; and consistently good academic record with first class or high second class (B+) Master's Degree in the subject concerned or an equivalent degree of a foreign University in such subject.

General:

For purposes of qualifications required for the above posts the Degree obtained in a subject taught in a Department, which is subsequently constituted into separate Departments, shall be deemed to be Degrees in the subject concerned for the newly constituted Departments.

Relaxation in the prescribed qualifications may be made in exceptional circumstances in accordance with the Statutes. Ability to teach under-graduate classes for all posts through the medium of Hindi essential.

Benefits of Provident Fund available as admissible under the rules on confirmation for all posts. Period of probation is one year. It is not necessary to fill all/any of the advertised posts.

Applications on the prescribed form (available on request accompanied with a self-addressed envelope of size 23 cm x 10 cm., free of cost from the office of the Registrar) with recent testimonials, publications etc. should reach the Registrar, Lucknow University by Monday, October 20, 1975. The candidates, who are in service, must send their applications through the proper channel. Application Forms to outstation candidates will be issued by post upto Saturday, October 11, 1975.

## SAMBALPUR UNIVERSITY JYOTI VIHAR : BURLA

Advertisement

No. 29156-TDS. Dated the 29-9-75

Applications in the prescribed form with attested copies of marks-sheets and certificates of the examinations passed are invited for a post of Professor-cum-Principal in the Laypat Rai Law College, at Sambalpur.

I. Scale of Pay:—

Rs. 1100-50-1300-60-1600/-

II. Age of retirement: Sixty years of age

III. Qualification and Experience:

**Essential Qualification :**

- (a) M.L. or LL.M. or Bar-at-Law Degree or equivalent qualification.
- (b) Must have fifteen years of Professional experience out of which at least five years of teaching experience in law.

**Desirable Qualification:**

- (a) Higher research qualification preferably a Doctorate Degree.
- (b) Administrative experience will be considered as an additional qualification.

A Professor-cum-Principal may also be appointed on contract basis for a specified period. Retired persons may also apply. Higher starting may be given in deserving cases. The post carries usual dearness allowance as would be sanctioned by the University from time to time.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 2/- (Rupees Two) only. Candidates intend-

ing to receive forms by post are required to send (a) Crossed Postal Order of Rs. 2/- payable to the Finance Officer Sambalpur University, Burla (b) a self addressed envelope (23 cm X 10 cm) with postage stamps worth Rs. 2/- affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money Order/Cheque will not be entertained.

The last date of receipt of applications in the office of the University, Jyoti Vihar, Burla is 1.11.1975.

The candidates will be required to appear an interview before a selection committee at their own expense.

All communications should be addressed to the Registrar by designation only.

Sd/- G.P. Guru  
Registrar

## SAURASHTRA UNIVERSITY

Applications in the prescribed form are invited for the post of PRINCIPAL for University conducted (1) Sir P. P. Institute of Science and (2) M. J. College of Commerce, Bhavnagar in the scale of Rs. 700-40-1100.

The posts are permanent and carry benefits of Contributory Provident Fund. Dearness allowance will be paid as per rules. Free housing accommodation will be provided. Higher initial pay in the scale may be considered in case of exceptionally qualified and experienced persons. Qualifications and experience relaxable in special cases. Candidates in employment must submit their applications through their present employers. Candidates if not knowing Gujarati will be required to pick-up Gujarati within a reasonable period. Age ordinarily not exceeding 55 years.

The candidate must have the minimum qualifications and experience necessary for recognition as a Professor and at least ten years teaching experience as a lecturer and or Professor in a subject included in the Science Faculty (for post-1) Commerce Faculty (except languages) (for post-2). Administrative experience as the Head of the Department in any college or a Ph.D. Degree in Science, (for post-1) or Commerce (for post-2) will be considered as additional qualification.

Application forms and details of other qualifications and experience required will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot on sending a self addressed envelope of the size 23 x 11 cms with postage stamps worth One Rupee.

Application in six copies accompanied by Indian Postal Order for Rs. 5/- crossed in favour of Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot should reach this office on or before 30-10-1975.

V.M. Desai  
Registrar

# THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities

## PHYSICAL SCIENCES

### Mathematics

1. Maddanayagam, Uppasamy. Representation of algebras by sections of sheaves. Andhra University.
2. Pokhrail, Suhash Chander. Momentum and heat transfer problems in non-Newtonian fluids. Kanpur University.
3. Soni, Raminder Singh. Generalised measures of information through functional equations. University of Delhi.

### Statistics

1. Saxena, Santosh Kumar. Some contribution to design and analysis of mixture experiments. Kanpur University.

### Physics

1. Aggarwal, Dinesh Chander. Planetary atmosphere. Awadhesh Partap Singh University.
2. Chikkur, G.C. Studies in organic liquid scintillators. Karnataka University.
3. Gopalkrishna Murty, Anday. Studies on meteors of October and rainfall calendaricities based on lunar effect. Andhra University.
4. Mittal, Raghuvir Singh. Self-focusing and nonlinear mixing of electromagnetic waves in magnetoplasmas. University of Delhi.
5. Mukerjee, Ashok Kumar. Ultrasonic attenuation and its dependence on the stress amplitude in the normal and superconducting states of indium doped tin. University of Delhi.
6. Mukerjee, Pradeep Kumar. Interaction of electromagnetic waves with moving anisotropic configurations. Magnetoplasmas, ferrites and conducting media. University of Delhi.
7. Patariya, Ayodhya Prasad. Semi-conduction and Persistent internal polarisation studies of organic molecular crystal with special reference to para-chlorouniline. University of Saugar.
8. Paul, Baby K. Optical studies of quartz and potassium dihydrogen phosphate crystals. Sardar Patel University.
9. Sanjeevi, R. A study on the influence of non-collagenous components on the physical properties of collagen fibres. University of Madras.
10. Zalpuri, Kunwar Sudheel. Experimental and theoretical studies of the equatorial lower ionosphere. University of Delhi.

### Chemistry

1. Bapuji, Marim Ganti. Saponins and saponinins of *Acacia concinna* (DC) and *Randia dumetorum* (Lamk). Andhra University.
2. Chauhan, Vivender Singh. G.L.C. structure elucidation, spectra and some reactions of the terpenes of shellac. University of Delhi.
3. Chauhan, Yeshpal Singh. Studies in the reactions of benzoyl peroxide on certain phenols and heterocyclic phenolic compounds. University of Delhi.
4. Kulshrestha, Subodh Kumar. A study in neoflavanoid series : (1) Chemistry of delbergiphenol ; and (2) Photochemistry of some neoflavanoids. University of Delhi.
5. Maruthamuthu, P. Kinetics of oxidation of substrates: Oxidation studies involving peroxydiphosphate. University of Madras.
6. Narayan Kumar. Terpenoids of *Pterocarpus santalinus*. University of Delhi.

7. Thakkar, Ramanlal Amratlal. Studies on amylose tripropionate and amylosetriacetate. Sardar Patel University.

### Earth Sciences

1. Arunachalam, P. The geology around Tirunelveli, Tirunelveli District Tamil Nadu. University of Madras.
2. Jagatheesan, M.S. The geology around Kambam, Madurai District, Tamil Nadu. University of Madras.
3. Rama Prasada Rao, I.B. Investigation on the sheet type bodies by one loop version of the transient pulse induction method. Osmania University.
4. Yellur, Dayanand Dattatreya. Geochemical studies on Dalma volcanic suite in parts of Bihar, India. Andhra University.

### Engineering & Technology

1. Jain, S.K. Some aspects of solid state luminescence of SrS, HO phosphors. Bhopal University.
2. Kohandaraman, C.P. A unified cumulative damage rule in metal fatigue. University of Madras.
3. Mehta, Arvind. The role of neodymium in the preparation of calcium sulphide phosphors. Bhopal University.
4. Parnerkar, S.S. Studies in behaviour of perspex magneto-electrets. Bhopal University.
5. Rajasekhara, B.M. Experimental and the theoretical study of flow past a porous medium. Bangalore University.
6. Seetharaman, S. Studies on design of spillway profiles. University of Madras.

## BIOLOGICAL SCIENCES

### Biochemistry

- Saini, Ajit Singh. Improved paper chromatographic techniques in clinical chemistry : Their application to some studies concerning metabolism of amino acids and aromatic amino acid metabolites. Nagpur University.

### Marine Biology

1. Manavalaramanujam, R. Studies on the cuticle and related structures in sipuncula. University of Madras.

### Botany

1. Isabella, P.K. A study of chlorococcales of Gujarat. Sardar Patel University.
2. Lakhanpal, Tej Nath. Taxo-ecological and experimental studies on myxomycetes. University of Delhi.
3. Muralidharan, K. Studies on the blast disease with reference to polyphenol oxidase. University of Madras.
4. Padma, A. Genetic and peroxidase isoenzyme studies of some induced and other dwarfs in rice. Osmania University.

### Zoology

1. Karkun, Tanima. Hormonal regulation of epididymal function in the golden hamster, *Mesocricetus auratus* (water house). University of Delhi.
2. Nevagi, S.A. Effect of gonadotrophine and adrenocortical inhibitors on ovarian growth and pregnancy in albino rats. Karnataka University.
3. Pandey, Balkrishnan. Studies on the morphology, Systematics and ecology of fresh water planarians. Awadhesh Partap Singh University.
4. Talikhedkar, Pandharinath Manikrao. Studies on the biology of the marine bivalve, *Donax cuneatus*. Marathwada University.

## **Medical Sciences**

1. Elliaiah, Poturi. Screening of Andhra and Kerala natural substrates for new streptomycetes and antibiotic production by two of them. Andhra University.
2. Gupta, Badri Nath. The location of type A and type B atrial receptors in cats. University of Delhi.

## **Agriculture**

1. Aggarwal, Man Mohan. Effect of N, P and K on yield and quality of high yielding and exotic varieties of wheat and paddy in alluvial soils of U.P. Kanpur University.
2. Balaguru, T. Sodium potassium interrelationships in soil and plant systems. Haryana Agricultural University.
3. Tomer, Rampal Singh. Heterosis, combining ability and stability studies in upland cotton, *Gossypium hirsutum* (L.). Haryana Agricultural University.
4. Yadava, Dharam Vir. Behaviour of cobalt in soil and plant system and its interaction with some metal ions. Haryana Agricultural University.

## **Veterinary Science**

1. Ram Chandra Prasad Singh. Studies on some adrenergic and purinergic mechanisms in the chick gut. Haryana Agricultural University.
2. Sushil Kumar. Studies on the pathology of chronic respiratory disease (CRD) caused by *Mycoplasma gallisepticum* and with other mixed infection like *Escherichia* and *Aspergillus fumigatus*. Haryana Agricultural University.
3. Verma, Prem Chand. Experimental studies on the pathology and pathogenesis of mycotic mastitis in goats with special reference to cryptococcus and candida infection. Haryana Agricultural University.

## **SOCIAL SCIENCES**

### **Psychology**

1. Patil, Vishwasrao Sheshrao. Studies in personality rigidity. Nagpur University.
2. Usha Rani Singh. Perceiver's personality and person perception. Bhagalpur University.

### **Sociology**

1. Gosala, Rama SeshaGiri Rao. Sociological aspects of the functioning of legal framework in an Indian factory. Nagpur University.

### **Political Science**

1. Kaura, Uma. Muslim and Indian nationalism, 1928-1940. Jawaharlal Nehru University.
2. Kini, Gopalkrishna Sarvotham. The city voter in India. D. Litt. Nagpur University.
3. Sareen, Anuradha. India and Afghanistan, 1907-1921. Jawaharlal Nehru University.

### **Economics**

1. Gupta, Vishveshwar Prasad. Tribal economy in Baghelkhand. Awadhesh Pratap Singh University.
2. Jorapur, Pandurang Bhimrao. Occupational mobility of industrial workers. Karnatak University.
3. Khakhar, K.K. Role of industrial estate in the industrial development of India with special reference to Gujarat. Saurashtra University.

### **Education**

1. Krishan Kinkar Prasad Singh. To develop a checklist for the identification of operational problems of secondary school teachers. Bhagalpur University.

### **Management**

1. Gupta, Sat Prakash. Development of managerial skills at the institutional level in India. University of Delhi.

## **HUMANITIES**

### **Philosophy**

1. Ghosh, Radha. The nature of ethical statements with special reference to A. J. Ayer and R. M. Hare. Kanpur University.

2. Sitamahalakshmi. 3. The Philosophy of Advaita with special reference to the Siddhanta-Lca-Sangraha of Appayya-Dikshita. University of Madras.

3. Jha, Luteshwar. Some problems concerning empirical knowledge. Magadh University.

### **Literature**

#### **English**

1. Pandya, Indubala H. A study of the English language used in Indian press advertising. South Gujarat University.

#### **Sanskrit**

1. Chatterjee, Kalipad. Mahakavi Bharve: Kiratajuncye vanita rajneeti. K. S. Darbhanga Sanskrit University.

2. Dwivedi, Balmukund. Sanskrit kosh: Udbhav aur vikas. Awadhesh Pratap Singh University.

3. Jha, Parmanand. Mahakavi Kalidas Kavyashu prakriti vishleshnam. K. S. Darbhanga Sanskrit University.

4. Jha, Sachchidanand. Parthiv jeeveshu praptata grahanakshattradi pramavasya sameekshnam. K. S. Darbhanga Sanskrit University.

5. Murdjo, Shashikala S. Problem of tragedy in Sanskrit drama S.N.D.T. Women's University.

6. Suvira. Rudra in Sanskrit literature. University of Delhi.

7. Vachaspati. Kalidasa Kavyashu dhvani saundarayan (Dhvani in the works of Kalidasa). University of Delhi.

8. Vajpayee, Krishan Avtar Anugecta. Alochanamak adhyayan. Kanpur University.

9. Varshneya, Jai Prasad. Arthashastra ka mahabhashya: Ya mula. University of Saugar.

10. Verma, Aruna. A critical study of the Brhaddevata University of Delhi.

#### **Hindi**

1. Awasthi, Bachchoo Lal. Siddhanti tatha tulniya sahitya chintan. University of Saugar.

2. Choudhary, Nageshwar. Maharishi Mehn Jeevan sahitya aur darshan. Magadh University.

3. Hadyesh, Indira. Acharya Pt. Ram Chander Sukla ke jeevan tatha kavya sambandhi manyataon ka vivichan Kanpur University.

4. Jha, Vivekanand Kavi Manbodh-O-Hunak Krishan janm: Ek shastriya adhyayan. Bhagalpur University.

5. Mishra, Govind Prasad. Bagheli evam chhattisgarhi lok gecton ka tulnotmak adhyayan. Awadhesh Pratap Singh University.

6. Mishra, Shard Kumar. Sant Dadu Dayal ke darshnik vicharon ka anusheelan. University of Saugar.

7. Pravasi, K. L. Bundelkhandi aur Malwi lok kathaon ka tulnotmak adhyayan. Bhopal University.

8. Rajak, Gopital. Kabir ke adhyatam sadhna ka swaroop: Vivechan. University of Saugar.

9. Saxena, Shobha. Nayee kavita mein prabandh kavya. Bhopal University.

10. Sharma, Bhimraj. Sagum bhakti kavya mein aaradhna ke vividh swarup. Bhopal University.

11. Sharma, Devkaran. Khuman maankavi aur unka kavya. Awadhesh Pratap Singh University.

12. Sharma, Pushpaista Goverdhanas. Hindi varan sahitya mein bhakti. Sardar Patel University.

(Continued on next page)

# Additions to A.I.U. Library

## Additions during September, 1975

- Asian Regional Seminar on Polyvalent Adult Education Centres. Bombay, 1971. *Polyvalent Adult Education Centres: Final report*. Delhi, Ministry of Education and Social Welfare, 1971. 62 p.
- Association of Universities and Colleges of Canada. Ottawa. *Student of the 70s in a changing university: Proceedings of the annual business meeting and conference, Ottawa, 1973*. Ottawa, Author, 1973. 130p.
- Barrow, Robin. *Moral philosophy for education*. London, Allen & Unwin, 1975. 214p.
- Brennan, E.J.T., ed. *Education for national efficiency. The contribution of Sidney and Beatrice Webb*. London, University Press, 1975. 208p.
- British Broadcasting Corporation, London. *BBC and the open university: An introduction*. London, Author, 1974. 27p.
- CSIR Scientific Workers' Association, Delhi. *Proceedings of the seminar on research management, Jamshedpur, 1974*. Delhi, Author, 1975. 42p.
- Dumazier, Joffre. *Sociology of leisure*. Amsterdam, Elsevier, 1974. 231p.
- Educational Facilities Laboratories, New York. *Generating revenue from college facilities*. New York, Author, 1974. 16p.
- Educational Testing Service, New Jersey. *Description of the college board achievement tests. College Entrance Examination Board*. New York, 1970-71. New York, Author, 1970. 127p.
- Educational Testing Service, New Jersey. *Proceedings for the three conferences on educational Accountability held at Washington, Hollywood and Chicago*. 2 Vols. New Jersey, Author (c 1971).
- Fay, Margaret A and Weintraub, Jeff A. *Political ideologies of graduate students. Crystallization, consistency and contextual effects*. Berkeley, Carnegie Commission on Higher Education (c 1973) x. 133 p.
- Goel, S.C. *Education and economic growth in India*. Delhi, Macmillan, 1975. viii, 158p.
- Goodlad, Sinclair, ed. *Education and social action. Community service and the curriculum in higher education*. London, Allen & Unwin, 1975. 203p.
- Hanson, John. *Use of resources*. London, Allen & Unwin, 1975. 102p.
- India. University Grants Commission and others. *Mathematics in India—Meeting the challenge: Proceedings of the conference on Mathematics Education and Research, Bangalore, 1973*. Delhi, U.G.C., 1974. 71p.
- Indian Agricultural Universities Association, Hyderabad. *Proceedings of the 5th convention, Tirupati, 1974*, Hyderabad, Author, 1974. 154p.
- Kapur, J.N. *Current issues in higher education in India*. Delhi, S. Chand, 1975. viii, 248p.
- Kidder, Louise H. and Stewart, V. Mary. *Psychology of inter-group relations: Conflict and consciousness*. New York, McGraw-Hill (c 1975) ix, 128p.
- Lee Soo Ann, and others. *Development planning in Southeast Asia: Role of the university*. Ed by Yip Yat Hoong. Singapore, RIHED, 1973. 295p.
- Malaysia. Ministry of Education. *Dropout study*. Kuala Lumpur, Author, 1973. ix, 125p.
- Mansukhani, G.S., ed. *Student power in India*. Delhi, Oxford & IBH (c 1975) viii, 110p.
- Marathwada University, National Integration Samiti, Aurangabad. *Seminar on Creative Writing in Indian Languages*. 1972. Marathwada University Press, 1972. 91p.
- National Staff College for Educational Planners and Administrators, New Delhi. *Educational innovations in India: Some experiments*. Delhi, Author, 1974. v. 311p.
- Orlans, Harold. *Nonprofit research institute. Its origin, operation, problems, and prospects*. New York, McGraw-Hill, 1972. xii, 243p.
- Patna University. *Proposals for the fifth-five year plan 1974-79 submitted to the U.G.C.* Delhi, Patna, University Press, 1973. 79p.
- Popham, W. James. *Educational evaluation*. New Jersey, Prentice-Hall (c 1975) vii, 328p.
- Shah, Gunvant, ed. *Studies in programmed learning*. Anand, Charotar Education Society, 1974. x, 192p.
- Sharma, K.N. *Institutions, networks, and social change*. Simla, Indian Institute of Advanced Study, x, 202p.
- Smith, David N. *Who rules the universities?: An essay in class analysis*. New York, Monthly Review Press (c 1974) 295p.
- Vickers, Geoffrey. *Making institutions work*. London Associated Business Programmes, 1973. 187p.

(Continued from previous page)

13. Sumati, R. Hindi sahitya mein Lalit nibandh. Kanpur University.
14. Yadav, Chander Kishore. Ramcharitramanas mein bimb-bidhan. Bhagalpur University.

### Urdu

1. Md. Mahfuzul Hasan. Dr. Ajmuddin Ahmed Azimabadi: His age life, poetry and other works. Magadh University.

### Persian

3. Naseem-ud-din. A critical study of Indo-Persian literature before the establishment of Delhi Sultanat. University of Delhi.

### Tamil

1. Selvarasan, M. Bharathidasan—A revolutionary poet. University of Madras.

### Kannada

1. Vrushabhendra Swamy, S. M. Kannada sahitya-dalli allamaprabhudeva. Karnatak University.

### Telugu

1. Addepallividyavathi. Talla paka kavula sahitya seve. Andhra University

### Geography

1. Sharma, Shree Kamal. Changing pattern of resources in the Baghelkhand plateau, M.P. University of Saugar.

### History

1. Anjaneyulu. Mantravadi Sitarama. Relations between the native aristocracy and East India Company from 1769 to 1834 in the Vizagapatnam District. Andhra University

2. Masthanaiah, Battepati. The temples of Mukhalin-gam. Andhra University.

3. Rai, Mangla. Pracheen Bharat mein jila shasan Bhagalpur University.

4. Risaldar, Yeshwant Krishnarao. The Varangacita of Jatasimhanandio: A cultural study. Nagpur University

## CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from Periodicals received in AIU Library during September 1975

### EDUCATIONAL PHILOSOPHY

- Cowen, Zelman. "Contemporary culture and the universities". *Lux Mundi* 4 (1); May 75 : 24-9.  
Lopez, Salvador P. "University and the formation of national identity". *Lux Mundi* 4 (1); May 75 : 33-7.  
Suchodolski, Bogdan. "Future of higher education". *Higher Education* 3 (3); Aug 74 : 331-39.

### EDUCATIONAL PSYCHOLOGY

- Case, Robbie. "Gearing the demands of instruction to the developmental capacities of the learner". *Review of Educational Research* 45 (1); Winter 75 : 59-87.  
Lewis, John. "Relationship between academic aptitude and occupational success for a sample of university graduates." *Educational and Psychological Measurement* 35 (2); Summer 75 : 465-66.  
Shah, D.C. "Student satisfaction with college tutorials". *Australian University* 12 (3); Nov 74 : 270-82.  
Whately, Susan E. and Davis, Rene V. "Model for psychometrically distinguishing aptitude from ability". *Educational and Psychological Measurement* 35 (1); Spring 75 : 51-66.

### EDUCATIONAL SOCIOLOGY

- Frederick, D.W. "Developing and fostering effective helping resources for students in tertiary institutions in Australia". *Australian University* 12 (3); Nov 74 : 213-25.  
Rajguru, G. Satpathy, G. and Das, P.C. "Academic achievements of students: Impact of parents and socio-religious factors". *Education Quarterly* 26 (4); Jan 75 : 41-2.  
Rao, K.N. "Growing multitudes and the search for educational Opportunity: Report of the national meet of experts on population dynamics and education, held at New Delhi, October 28-31, 1974". *University News* 13 (9); Sept 75 : 10-11.  
Tinto, Vincent. "Dropout from higher education: A theoretical synthesis of recent research". *Review of Educational Research* 45 (1); Winter 75 : 89-125.

- Whiting, Albert N. "Student culture and the educational process". *Lux Mundi* 4 (1); May 75 : 9-12.

### EDUCATIONAL PLANNING AND ADMINISTRATION

- Boss, James L. "New life for faculty and their institutions". *Journal of Higher Education* 46 (3); May/June 75 : 313-25  
Dressel, Stephen P. "Critique of planning models for post-secondary education: Current feasibility, potential relevance, and a prospectus for further research". *Journal of Higher Education* 46 (3); May/June 75 : 245-86.  
Meinert, Charles W. and Penney, Sherry. "Credit for life experience: Establishing institutional policy and procedures". *Journal of Higher Education* 46 (3); May/June 75 : 339-45.  
Richardson, Richard C. "Staff development: A conceptual framework". *Journal of Higher Education* 45 (3); May/June 75 : 303-11.  
U.S. Prasad. "Hierarchy in seats of higher learning: A baneful influence". *Education Quarterly* 26 (4); Jan 75 : 8-10.

### TEACHING AND RESEARCH

- Gardner, Paul Leslie. "Scales and statistics". *Review of Educational Research* 45 (1); Winter 75 : 43-57.  
Stanton, H.E. "Improving university teaching". *Australian University* 12 (3); Nov 74 : 264-69.

### EVALUATION

- Centra, John A. "Colleagues as raters of classroom instruction". *Journal of Higher Education* 46 (3); May/June 75 : 327-37.  
D'Agostino, Ralph B. and Cureton, Edward E. "27 percent rule revisited". *Educational and Psychological Measurement* 35 (1); Spring 75 : 47-50.  
Levy, Arieh and Shavit, Shlomo. "Types of examinations in history studies". *Journal of Educational Measurement* 11 (1); Spring 74 : 35-42.

- Masters, James R. "Relationship between number of response categories and reliability of Likert-type questionnaires". *Journal of Educational Measurement* 11 (1); Spring 74 : 49-53.

- Morgan, Ronald R. "Prediction of college achievement using the need achievement scale from the Edwards personal preference schedule". *Educational and Psychological Measurement* 35 (2); Summer 75 : 387-92.

- Mueller, Daniel J. "Assessment of the effectiveness of complex alternatives in multiple choice achievement test items". *Educational and Psychological Measurement* 35 (1); Spring 75 : 135-41.

- Oles, Henry J. "Stability of student evaluations of instructors and their courses with implications for validity". *Educational and Psychological Measurement* 35 (2); Summer 75 : 437-45.

- Rowley, Glenn L. "Which examinees are most favoured by the use of multiple choice tests?". *Journal of Educational Measurement* 11 (1); Spring 74 : 15-23.

- Shoemaker, David M. "Toward a framework for achievement testing". *Review of Educational Research* 45 (1); Winter 75 : 127-47.

- Tamir, Pinchas. "Enquiry oriented laboratory examination". *Journal of Educational Measurement* 11 (1); Spring 74 : 25-33.

- Wangoo, M.L. "Foreign examination systems: Their relevance to us". *Education Quarterly* 26 (4); Jan 75 : 15-18.

### ADULT EDUCATION

- Houle, Cyril O. "Changing goals of education in the perspective of life-long learning". *International Review of Education* 20 (4); 74 : 430-46.

- Mathur, M.V. "Role of higher education in life long education". *Education Quarterly* 26 (4); Jan 75 : 1-3.

### COMPARATIVE EDUCATION AND COUNTRY STUDIES

- Adiseshiah, Malcolm S. "Learning system in Tamil Nadu". *International Review of Education* 20 (4); 74 : 505-8.

- Bergendal, Gunnar. "U68—a reform proposal for Swedish higher education". *Higher Education* 3 (3); Aug 74 : 353-64.

- Bird, Caroline. "College is a waste of time and money: A holding pen for superfluous students". *Psychology Today* 8 (12); May 75 : 28-35, 78.

- Cerych, Ladislav. "International view of British higher education". *Higher Education* 3 (3); Aug 74 : 233-64.

- Duperre, Maurice. "Global development of the two year college concept". *Higher Education* 3 (3); Aug 74 : 315-29.

- "Going on to university is no simple matter". *Higher Education and Research in the Netherlands* 19 (2); 75 : 15-23.

- Goodman, R.D. "University education in Indonesia". *Australian University* 12 (3); Nov 74 : 243-63.

- Horowitz, Morris A. "University system in Spain: An analysis of structure". *Higher Education* 3 (3); Aug 74 : 341-52.

- Kaushik, S.L. "Window on the states: Education in Rajasthan". *Education Quarterly* 26 (4); Jan 75 : 24-35.

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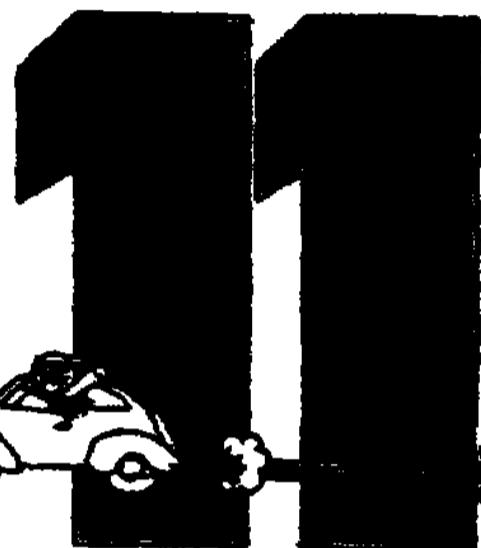
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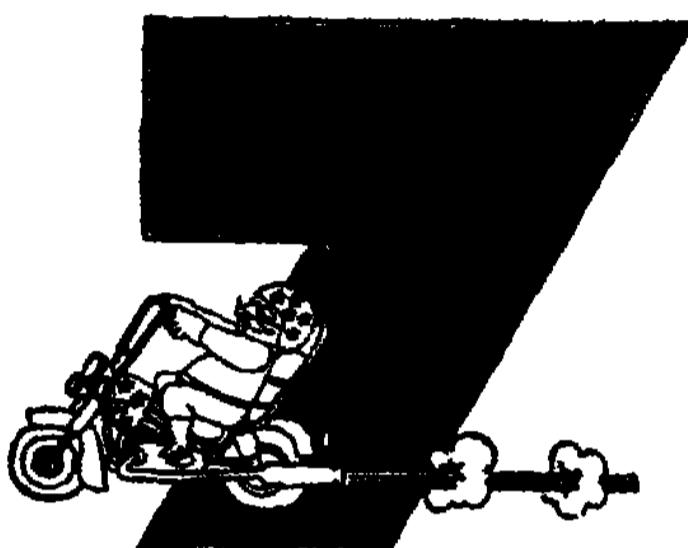
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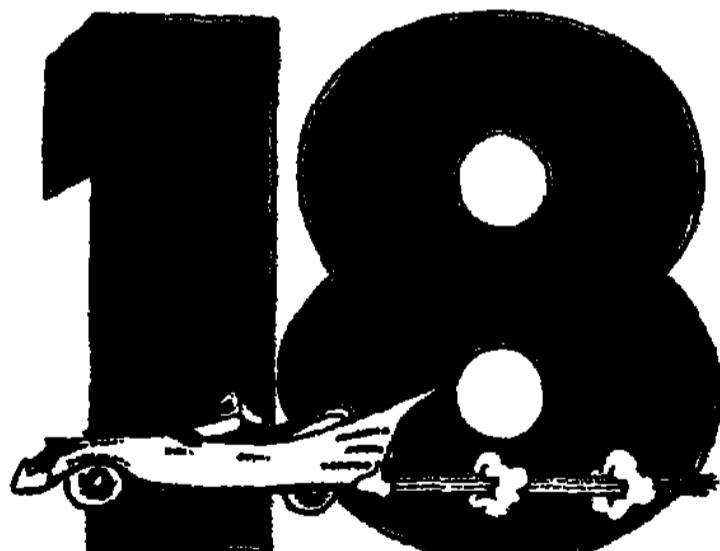
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## Problems of Postgraduate Education

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# UNIVERSITY NEWS

Vol. XIII NOVEMBER  
No. 11 • 1975

*A Monthly Chronicle of Higher Education*

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*Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association.*

## The Basic Issue

AS COULD have been almost anticipated, reactions to 'Idleness Unlimited' have been along predictable lines. Some have applauded the editorial as a frank and forthright expression of views. Some have referred to the lack of availability of space for teachers. Yet some others have referred to the enforced idleness of the teachers because of the rhythm of the academic year according to which no teaching can be undertaken when either the examinations are in progress or answer-books are being examined.

The purpose of writing the said editorial was to call attention to the state of the profession in so far as except for a handful of teachers the rest do not feel an obligation to do their best by their students. A climate of non-accountability had developed and this had to be challenged.

There is no doubt that in most places facilities for spending a few fruitful hours with students and other colleagues do not exist. Yet it requires no effort to show that all that is required to provide these facilities is diversion of 5% of the budget that is being spent on capital expenditure. Surely this is not beyond our means. Only no one has given this problem the attention that it deserves.

In a sense, the other problem is more serious. We have organised our examination routine in such a manner that an examination is a real, major undertaking. Thousands of students are involved. Therefore hundreds of teachers have to be involved in every university. Indeed sometimes the number runs into thousands. Because of the size of the operation, almost every other activity gets suspended. As a matter of fact teaching work gets suspended several weeks before the examination is due to begin. All these are features that are related to the system of examinations which we have evolved for ourselves. While this is not the occasion to seek to analyse the problems of examinations, it is time that we recognised the enormous damage that is being done to the educational system because of this system.

All this does not invalidate the basic proposition advanced in that editorial that over the years a kind of *ethos* has grown up in the universities and colleges in terms of which most people would like to draw a whole-time wage for a part-time job. That is the essence of the problem. None of the numerous correspondents who have written on the subject have chosen to dispute this basic proposition. Once this is accepted, ways would be found of re-arranging our academic schedule, of modifying our system of examinations and even of re-designing the architectural features of our educational buildings. It can be no one's contention that the level of performance in other spheres of activity does not suffer from infirmities. It does; but in no other sphere of activity is non-performance a part of the accepted system. All exaggerations & distortions apart, this is so in respect of our universities & colleges, & this should not be allowed to continue.

There is a simple statistical way of looking upon this problem. The outlay on education at the tertiary level is in the neighbourhood of Rs. 500 crores per year. Something like two-thirds of this amount is spent on salaries of teachers. If the productivity of teachers can be improved even by 50%, the outlay on education would have been increased by another Rs. 200 crores or so. We should therefore confront the problem rather than seek to evade it or confuse it by bringing in side issues. Jawaharlal Nehru once said, "I am not interested in excuses. I am interested only in results". Let that be our watchword too.

# Varsity & Youth Programmes

TO OBTAIN the full import of the various youth Programmes organised at the Birla Institute of Technology & Science, Pilani (BITS) it would be profitable to give a few broad sweeps to qualify the Institute.

In recent years certain fundamental educational reforms have been successfully implemented at BITS, the concepts underlining the same are enumerated below:

- (i) Existing models handed down by a colonial heritage must be replaced by an alternate model which can be discovered only through innovation and experimentation.
- (ii) In this task of evolving an alternate model it is imperative to view the university as a total system wherein knowledge is not fragmented and input in the system is not given a discriminatory treatment based on current market values. This requires an integration of education and a policy of admission which accepts the responsibility to take care of marginally deficient students, students with advanced standing and necessity of taking a decision about their ultimate degree only after they spend sometime in the university.
- (iii) A restructuring of educational programme where the early years are broad-based, strong in fundamentals and rich in analytical tools, Specialisation is to follow the broad-based foundation years and is also to be formulated in terms of a critical encounter with the environment. The structure would be flexible to provide multiple entry, mobility of the student horizontally i.e. change of his programme in the mid-stream and vertically i.e. telescoping his movement up the academic ladder. The flexibility should also enable a student to make a suitable career planning whereby a late starter or one with a second thought can always discover no horizons.
- (iv) To make education an instrument for national development, it must be relevant and should serve a social purpose. To achieve this, educational methodology is to be so institutionalised that before the completion of the degree a student together with his teacher participates in a real life situation through the practice school, mini practice school, N.S.S., N.C.C., etc.
- (v) The extreme alienation of academic research must be rectified by deliberate reallocation of

resources so that research necessary for the fulfilment of even the highest degree in the university originates from the environment.

- (vi) The voluntary involvement of a student in social work should earn him academic credit irrespective of the degree for which he is enrolled.

The implementation of the above changes has made it possible to take a fresh look at the methodology of teaching. Throughout recorded history the formal teaching process is dependent on teacher-supervised classroom. Under this process the teacher delivers lectures in discrete packages of knowledge which are deposited with the student in a narrative style. This is a costly enterprise and its effectiveness in a mass educational system, which retains students longer in the system, is being seriously questioned by both educators and students. Indeed students impatiently dismiss it as listless, paternalistic and stultifying knowledge divorced from its origin and its application is only an alienated knowledge. It can domesticate a student but cannot completely educate him. The BITS methodology of practice school and mini-practice school attempts to enliven part of the process by forcing an encounter with real life. In this method of transmission of codified knowledge gets replaced by problem-posing. This is a cognitive process, where a critical involvement of the teacher student team with real life is made possible. Classroom lectures and laboratory exercises are replaced by a process where teacher and student educate each other through the mediation of the real world. The content of the course is no longer what the teacher-alone decides what the student's need is. It is now something which evolves through a dialogue between teacher-student teams and persons from the real world.

The waves of these reforms have now touched and may engulf the various social service schemes operating in the Institute namely, N.S.S., N.I.S., N.C.C., Planning Forum etc. Thanks to the reforms in the Institute, the old stereotyped activities in these social service schemes are now taking a new shape. These schemes are no longer based on personal enthusiasm for 'doing good' to the village or for 'giving knowledge' to the villagers.

Under such an arrangement the youth programmes now becomes new media to create a link between the shaky ivory tower of the university and the real world of villagers. These programmes now encourage a shared purpose between these two worlds. Social service is no longer a transient whim or hobby but a real method for purposeful education.

It would be evident from the above that these concepts and ideas did not come up suddenly. They are the result of an evolutionary process. Thus in some cases involvement of the student is already taking place in the direction described above; while in some other cases they are in the formation or planning stage.

Some of the academically valid projects that have been already identified are : the design of mud-hutments in a village, drainage system preventing sedimentation in the village pond, studying the energy system of the village, establishing a training for village craft in the Institute workshop, afforestation for a village, improving the efficiency of the Gobar Gas Plant and solving its managerial problems for a particular village, development of low cost solar water pump, solar dryer, soft ware for mass communication and functional literacy. These are described in greater detail under the heading "Some Project/Theses Topics" (identified through youth Programmes at BITS and suitable for investigation towards fulfilment of Degree requirements).

In a similar way the apathy and indifference towards the N.C.C. can be lifted by a proposal where by the practice school concept would be used as a framework incorporating training in Military discipline, Military Science and Engineering activities of the defence forces.

It is predicted that this concept of education once it permeates all activities and functions of the university will automatically integrate the classroom education of the student with many extracurricular activities from which he learns in a cognitive manner. This will provide not only excitement but also set the stage for socialization through participation and sharing in the village life. This is another advantage. Since these programmes would not remain isolated hangers-on to the university activity, part of the money required for these activities would then come from the normal budget allocated for education and research in the university. In other words the university curricula will still require project/thesis and course development; but the theme and the problems would now come from the environment. It is only through such institutionalised involvement that the quality of environment can improve and the students contribution in the process will acquire a new richness and a new meaning. It is only then that student participation in national development will become a reality.

### SOME PROJECTS/THESES TOPICS

#### *Planning Better Village Huts*

1. It is observed that many of the inadequacies of village housings stem from reasons other than the type of materials used. Civil Engineering students could profitably work on a project aimed at improving design and construction of village huts from the point of view of hygiene, protection from extreme temperature conditions and ventilation while using the same materials as of now.

#### *Bio-Gas-Plant*

2. Cattle dung and human night-soil contain a rich source of energy. If this energy is extracted through Bio-Gas-Plant, many problems of rural life could be ameliorated. Through the efforts of the NSS group of BITS, over the last few months, a Bio-Gas-Plant has been constructed at Pilani. A Project with a view to improve the efficiency of conversion of dung and night-soil into the gas over wide temperature variation (a phenomenon common in semi-arid-zone like Pilani) forms an obvious next step of enquiry,
3. Optimization of the use of Bio-Gas keeping in mind various demands as well as other energy resource availability for a given village community.
4. Design of an efficient management system for the Bio-Gas-Plants keeping in mind the social back-drop.
5. Investigations for the use of biological wastes other than cow-dung for the production of bio-gas.

#### *Conservation of Energy and Waste Utilization*

6. Design of a solar dryer for a particular village produce.
7. Study of methods of treatment and utilization of village wastes.
8. Study of methods of treatment and re-use of waste-water.
9. Study of possibility of energising village receiving sets using solar cells.
10. Study of energy flow in a village indicating availability as well as pattern of consumption of the capital as well as income energy sources with a view to study the total energy system.
11. Design and fabrication of low-cost solar water pump which can be economically maintained in our rural setups.

#### *Water Resource Management*

12. Study and improvement of a water resource management system for a village pond on which the village life is strongly dependent.
13. Study and implementation of desilting methods for a given village pond.
14. Water from open wells around Pilani contains high concentration of fluorides which are bad for teeth. Disinfection and defluoridation of such waters would form a very useful project.
15. In semi-arid conditions such as around Pilani, high rate of evaporation of water from ponds may prove critical for village life. It will be worthwhile to study the methods of reducing this rate of water-evaporation.
16. Design of water-supply system for a small

town like Pilani having a population of about 20,000.

17. Feasibility study for a possible extension of Loharu canal to Pilani.

#### *Ecological Projects*

18. Over last few years BITS researchers have collected and established the base-line data (fauna, flora, soil water, wind velocity etc.) of the Khetri ecosystem where a large copper and fertilizer complex has come up. In continuation of this work it will be worthwhile to study efficient methods of disposal of the effluents that are being produced from this complex.
19. Study of the base-line data before and after the commissioning of the Loharu Canal.
20. Study of the processes involved in the stabilization of sand dunes which are in plenty in villages around Pilani.
21. Study and implementation of methods of improving environmental sanitation.
22. Indiscriminate grazing deprives the soil of its plant cover and thus leads to soil erosion. Project aimed at reducing grazing through 'rotational grazing' would go a long way in meeting with the problems of soil erosion and desert conditions.
23. Date palm grows in dry areas like Israel. Rajasthan should provide ideal ground for such cultivation. Investigation in this direction would be very valuable.
24. Next to insects, rats cause the greatest destruction of grain and snakes are the most powerful natural enemies of rats. It will be worth investigating the ecobalance between rats and snakes in the areas around Pilani.
25. It will be worthwhile studying food habits of peacocks which are found in plenty in and around Pilani. Such a study would tell us about their coordinates in the ecosystem particularly from the point of view of our agriculture.

#### *Afforestation*

26. Wind and lack of moisture lead to formation of sand dunes. Such sand dunes which are particularly harmful to good agriculture abound around Pilani. Planned afforestation with selected trees would considerably check the mobility of such sand dunes. Investigations carried out by NSS group of BITS in and around village Dhandhar, adopted by the group, indicate that trees such as *Saccharum*, *Parkinsonia* and *Acacia* and some important grasses could be very effectively planted for such purposes.
27. Oils from medicinal plant such as *Citronella* provide a rich source of income to farmers. Initial techno-economic analysis conducted by NSS group of BITS with the help of a

CSIR laboratory at Lucknow—indicates that villagers around Pilani can increase their earnings by successfully cultivating medicinal grasses that yield valuable oil.

28. Depth of village ponds in sandy areas becomes progressively less due to inflow of surrounding soils as well as loose sand, into it.

#### *Science Communication*

29. Design and fabrication of science-demonstration models, drawn from experiences of the village life, which can carry scientific culture to the villagers.
30. Organization of library and museum extension services for benefit of villagers through mobile science museums and mobile libraries.

#### *Health Projects*

31. Study and implementation of methods for imparting health education to the villagers.
32. Organization of machinery for effective mass immunisation and inoculation drives for the prevention and control of chicken-pox, small-pox typhoid, cholera etc.

#### *Social Science Projects*

33. Techno-economic survey of villages around Pilani with a view to study problems of optimum resources allocation.
34. Study of welfare effects of a university township like Pilani and a copper town like Khetri.
35. Design of methods of teaching both for functional literacy as well as acceleration of the literacy drive for the village youth who is otherwise heavily engaged in the productive life of the family.

#### *Projects of Benefit to the Non-Student Youth*

36. Organization of workshop-training activities for the non-student youth from villages around Pilani with a view to impart to them technical skills.
37. Establishment of 'village workshops,' totally handled by the non-student youth, which are so equipped as to completely take care of the engineering needs of villages.
38. Organization of training facilities in fields like instrumentation, workshop activities etc. with a view to provide opportunities for vocationalization of students after X standard.
39. Organization of social, educational, and cultural activities in villages around Pilani with a view to increase circle of participation for non-student youth.

#### *Mass-Media*

40. Development of radio as well as TV educational software based on a direct experience of different facets of a village life.

#### *Projects Dealing with the University Campus*

41. Design of a modern student activity centre in the Institute.
42. Study of problems of power maintenance with a view to suggest optimum methods for power utilization.

# Problems of Post-Graduate Education

*The Karnataka University Post-Graduate teachers recently organised a Symposium on Problems of Post-Graduate Education. Below is given an adapted version of the inaugural address of Dr. Amrik Singh on this occasion.*

THE basic problem in regard to post-graduate education is the problem of quality. More than a decade ago, once talking to a junior colleague who had just taken his Ph.D. in Mathematics from one of the Indian universities, I asked him to explain to me why the number of students going for doctoral degree in a subject like Mathematics was so small. As far as I remember, not more than 10-11 students had got their doctoral degree in Mathematics that year. His reply had stayed in my memory and I should like to report it to you as suggestive of a whole range of issues regarding post-graduate education.

His explanation went somewhat like this. In a subject like Mathematics there is such a gap between standards at the master's level and at the Ph.D. level that no one can expect to do his Ph.D. unless he has first of all instructed himself adequately in the fundamentals of the subject. After he has done that he has to choose a real good subject. Not only that, his thesis must be, however remotely, some kind of a contribution to learning. When all these steps have been taken he has to cross the final hurdle which is to be examined by experts in the field. Quite often in a subject like Mathematics the experts may be from any country of the world.

His reply, I should think, more or less sums up the situation at the post-graduate level. Amongst the issues to which my colleague drew my attention, the following may be identified:

- (1) Standards at the master's level are not satisfactory enough.
- (2) Between standards at the master's level and the Ph.D. level there is quite a wide gap and it is not everyone who can manage to cover it.
- (3) In order to cover this gap, a student has to be well motivated and somewhat self-reliant. More than that, he should also be working in a situation where close professional collaboration is possible and there is easy and fruitful access to books, journals and suitable guidance.
- (4) In subjects where standards of comparison are international, the situation is different from subjects where the standards of comparison are local or national.

If I may say so, these four things in themselves sum up the situation at the post-graduate level with which

all universities in the country are faced. In the rest of my address I would like to deal with them one by one.

Why are standards at the master's level so unsatisfactory? No one answer can be given to this question. Instead the question has to be approached from a number of angles. First of all is the issue of what kind of students get admission at the master's level. If they have had good under-graduate education it is reasonable to hope that they would profit by the advanced teaching that they would get. In this connection I would like to call attention to the experience of the University of Delhi, a university which I have known rather intimately for a quarter century. At Delhi almost all good students choose to take up an honours course which is also a three-year course like B.A., B.Sc. (Pass) but it has a separate syllabus and it is quite impressive in its range and coverage. In a couple of subjects with which I am familiar, I would say that a good honours student from Delhi University covers more or less what on average a student at the M.A. (Previous) level in several other universities would cover. When such a student comes to the master's course he is already well prepared and therefore he can greatly profit by the kind of advanced instruction which is imparted at the post-graduate level.

Quite some universities in the country have this system of Pass and Honours degrees, both given at the end of three years. In certain universities it is called B.A. (Special). Speaking in educational terms, this is nothing but what is known as the principle of 'streaming'. Every class is divided into two or more streams depending upon their ability and previous training. The better ones are taught separately at a pace set to suit their capacity to absorb new knowledge. The rest follow a different pace and set their sights a little lower. As far as Delhi University is concerned, almost all students who get 50% and above choose to go into honours course. Sometimes those between 45% and 50% also do an honours course. Those below 45% are not eligible however. In most colleges the average strength of an honours class is 15 to 20. Therefore students get what may be described as special attention. All this makes for good teacher-pupil contact and on the whole the standards are satisfactory.

I also know the argument against this honours course and it is but fair that I should refer to it. Doing a specialised kind of course at the age of 16 may be described as early specialisation. But this

aspect of the problem is taken care of because students are required to do two subsidiary subjects also. I have described this whole system at length because as far as I can see, good preparation on the part of the student for the master's degree course is an important precondition for good standards of performance at the post-graduate level. Most places at the master's level in the University of Delhi are taken up by these honours students. But in a few cases in arts subjects, even those who have a high score at the B.A. (pass) level do get admission. In the sciences this does not happen at all, it must be added however.

The next important input for good standards at the post-graduate level is the quality of teachers. In regard to this I wish to say only one thing. Hardly any country in the world has had a rate of expansion of more than 5-6% per year. In our country the rate of expansion has been 11-12% per year for almost two decades. Amongst other things, this has meant considerable addition to the corps of teachers. Our educational system was not producing teachers of the required calibre in required numbers. Consequently, a substantial percentage of the teachers recruited in the last two decades are persons who normally speaking would not have been recruited at all. My own guess is, and there are no hard statistics to go by, that something like 50% of teachers now in position are definitely sub-standard. Now that they are within the profession it is an obligation of the profession to see that they are helped to improve their capacities. Something is being done in this regard but I am afraid in terms of the magnitude of the problem what is being done is disappointingly small. What is required, if I may say so, is that every single teacher now in the profession should be obliged to re-train himself within the next five years. At the rate at which we are going we will hardly be able to cover 10% of them and no more. That this is a cause for concern is something so obvious that I do not wish to dwell on it.

Most of these teachers are to be found at the under-graduate level where the expansion has been the steepest. But quite a few of them have managed to find their way into post-graduate teaching as well. Since our resources are limited, as they doubtless are, and since it may not be possible to re-train each one of the teachers in position, to set the target at re-training all those who are teaching at the post-graduate level may not be described as unduly ambitious. The number of such teachers cannot exceed more than 25000-30000. To oblige them to improve their competence through further training and research and intensive professional growth should not be beyond our resources. Nor should it be beyond our ambitions as unfortunately it appears to be today.

It is not for me to dilate on the importance of a teacher. The thing is so obvious that one need not spend any time on it. The only point that I would like to underline is that quite a percentage of those who do the post-graduate degree go on to adopt teaching as a career. If their training and preparation

have been unsatisfactory, as they evidently are today, in a sense we are not breaking the cycle but extending it. That is why I feel that enabling the post-graduate teachers to grow in competence and knowledge is imperative and the sooner this is done the better it would be.

In this connection I would also like to refer to post-graduate teaching in some of the affiliated colleges. According to the statistics available, the number of students passing out from post-graduate colleges is more than 50% of the total number of students getting their master's degree. In any discussion of post-graduate education therefore the role of these colleges deserves to be examined closely. Interestingly enough there are very wide variations in the country in this regard. There are States like U.P., Gujarat, Andhra Pradesh, Kerala, Rajasthan, where a large number of colleges enrol post-graduate students but there are States like Karnataka and Bihar where there are hardly any post-graduate colleges and the bulk of post-graduate teaching is done either in the university departments or the university centres. Some of the colleges maintain as good standards as university departments but their number is not particularly large and the bulk of these post-graduate colleges are unsatisfactory in every way and the real dilution of standards takes place in these colleges.

The question arises what is to be done in this regard. To say that there should be no post-graduate teaching in any college would neither be fair nor realistic. What is required is some kind of rationalisation and some kind of streamlining. For instance, in most of these colleges it is usually an enterprising individual who has managed to get affiliation in a particular subject from the university. Even if he leaves the college, as happens sometimes, the affiliation once granted continues to be in force. In certain cases the motive of this enterprising individual was academic but in most cases, sad to say, the motive was pecuniary. As most people would recall, there were and still are separate grades for under-graduate teachers and post-graduate teachers. If a teacher wanted to get a better scale of pay, the obvious way to do so was to get affiliation in that subject in his college and then he would automatically be upgraded into the new scale. This happened on a very extensive scale in those States where today the number of post-graduate colleges is large. May be with the introduction of the new UGC scales of pay which one hopes would gradually be extended to all States, the virulence of this problem would to some extent decline.

So far I have been mainly talking about the first issue i.e. regarding the low standards at the master's level. In a sense I have also covered some of the other points by implication but let me deal with them in further detail.

The second point for consideration is the wide gap that exists between standards at the master's level and at the Ph.D. level. To some extent this issue is related to the first one. If standards at the master's

level can improve, there would be to that extent much less of a gap to cover for a student before he undertakes his research at the Ph.D. level. In this context the issue of modernising the syllabus might also be referred to. As we all know, there has been so much explosion of knowledge in recent decades that unless the syllabi are revised every 3-4 years one tends to lag behind. I was talking to an economist some weeks ago. I got this picture from him. I cannot vouch for it because I am not an economist but broadly speaking it seems to me that what he was saying is correct. According to this economist, there are only 4-5 places in India where Economics is being taught on an internationally comparable standard. In another 15-20 universities, he said, most of the syllabi are behind times by a decade or so but not more than that. Perhaps it is another way of saying that in these 15-20 universities Econometrics which is the latest trend in Economics is being taught but not at a very advanced level. In the rest of the universities, according to this friend of mine, conditions are appalling.

Why should this be so? The answer is simple. The teachers manning these various departments and boards of studies are not moving with the times and therefore they do not wish to undertake to teach anything which they themselves had not learnt when they were students. We know the explanation now, if I may say so, but what do we do about it? No one can legislate in a matter like this. Even agencies which are vested with statutory powers in matters of coordination and maintenance of standards can be effective only upto a point. This is because no outside agency can do what has to be done essentially within the universities. In plain words, what is required is a programme whereby professional growth would not be made possible but would also be made obligatory. But once again the impulse has to come largely from within and only partly from without. I do not wish to pursue this topic any further not because I do not have many things to say about it but because I do not wish to stray too far away from the main subject. One thing may however be said without any fear of contradiction. Unless we can succeed in improving the quality of our teachers at the post-graduate level the standards of performance would never improve. This is nothing new but perhaps it is important to re-state something so obvious and so fundamental.

It does not seem necessary to dwell very much on the third issue for consideration. That students at the Ph.D. level should be well motivated and should have opportunities to interact with teachers who can instruct and guide them and help them with their research work are issues that would be more or less taken care of once the first two issues have been attended to satisfactorily. The number of libraries in the country which have a fairly good collection of journals is not all that small now. In regard to library facilities and specialised libraries too the situation is much better than what it used to be some years ago. The only missing element, if I may say so, is the availability of well motivated students and teachers who are interested in operating on the frontiers of knowledge.

I hope I will not shock too many people when I say that even at the Ph.D. level there has been considerable dilution of standards. I say it with a sense of sorrow because while in regard to all other degrees there can be and there is a lot of variation, the Ph.D. degree is what may be described as an internationally accepted coin. But even in regard to the Ph.D. degree we have permitted considerable decline in standards. The causes for it are various and multiple. It is not necessary to go into each one of them but one particular element may be called attention to, and that is respect of internationally comparable standards. If it is one of the hard sciences, the standards have to be international, it goes without saying. In regard to the social sciences and humanities however the situation is somewhat mixed. In some areas research work being done is creditable. In some areas however it is far from creditable and the results are there for everyone to see. When it comes to languages, the situation is almost appalling. In respect of languages, there is no question of comparison even between one Indian language and another. What the language scholars therefore do is to enter into a race with one another. The objective of this race is to turn out more and more Ph.D.s. Indeed they seem to think that the more Ph.D.s are produced the more they have added to the sum of human knowledge. How far is this line of thinking valid and defensible is something that I will leave to your judgement. In talking of the last point therefore the only thing that I would like to emphasise is that a university by definition is concerned with the universe of knowledge. Knowledge knows no boundaries and no barriers. Indeed knowledge is universal. If a university chooses to subvert its own mission all that one can say is that in the long run this will undermine the whole concept. I will not say that the concept has been already undermined. But that we have been moving in that direction for quite some years is something too obvious to be commented upon.

In this brief survey of the study of post-graduate education, I have referred to some of the more important problems. There are quite a few others to which reference could have been made. Before I close, I would like to refer to one of them and that is the element of wastage of funds at the post-graduate level. While funds have been always scarce, it is a pity that they have not always been used economically and wisely. There are at least 15-20 cities in India where more than one college imparts instruction in the same subject in which another college a mile or two away is imparting instruction. In both these institutions the number of students is not all that large. As should be only too evident, this is permitting some enterprising individuals to utilise public funds in order to bolster their sense of self-importance. While each one of us would recognise that it is important to feel self-important, there are limits beyond which this kind of a thing should not be permitted. It is not only because funds are in short supply. But more than that, men with the requisite ability and experience are equally scarce. Spreading them out too thinly will neither help the cause of post-graduate education nor enable

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## Educators on Secularism Socialism & Democracy Meet



Prime Minister Indira Gandhi addressing the 1st All India Conference of Educators on a Democracy Socialism in New Delhi

THE first All India Conference of Educators for Secularism, Socialism and Democracy held in New Delhi between 19th and 21st September 1975 was attended by about 225 participants drawn from many States and Regions of the country, working in the several colleges and Universities, institutes of research and learning in different parts of the Republic of India.

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these individuals to grow professionally.

What is true of colleges is sometimes true even of universities. Universities in the same State also sometimes give evidence of this sense of rivalry with one another. At the post-graduate level there are certain subjects which are less popular than others. Whenever the numbers are small it stands to reason that only one university in a State may be enabled to establish that department. In fact if some kind of a rational policy is followed, each university can be given one or two of these less popular subjects to handle with results that would be profitable both for students and the State itself.

In this brief survey of post-graduate education in the country, I have called attention to some of the more important problems. I hope that these will be discussed in the course of the next two days in greater depth and greater concreteness. I myself look forward to participating in some of these discussions. Indeed I hope that as a result of these discussions we would have a definite set of recommendations to put before the academic community so that these can be implemented in the years to come. □

The main focus of the Conference was on the role of the academic community in the strengthening and working of the democratic federal polity of India. The three major themes of discussions, viz. (i) Democratic Polity of India: Perils and Prospects, (ii) Higher Education and Scientific Research: Challenges of Nation-Building; and (iii) Role of the Academic Community, were conceived as an organic whole. The specific concern was to highlight the operational aspects of the problem, particularly by identifying the major hurdles to the requisite structural change and the processes of functioning and the necessary reforms needed for attuning the Educational System to the basic consensual national objectives of Secularism, Socialism and Democracy.

The Conference took note of the fact that over the past decade, and specially during the last two years, we have witnessed the emergence of ugly forces of unreason and darkness, which selected the democratic polity and the academic institutions as their major targets of assault. Persistent efforts have been made to weaken, subvert and destroy the basic institutions of our democratic polity, like the parliament and the legislatures, on the one hand, and the academic institutions of higher education and scientific research,

on the other. From persistent vilification and character-assassination to murder and organised violence, from destruction—almost nothing was left untried by these elements in a determined bid to destroy the basic fabric of our democratic polity, endangering the very integrity and survival of the nation. The declaration of emergency, the ban on the working of these forces of unreason and violence and other energetic measures to contain and control the anti-social and subversive forces came not a day too soon. As a result, the inherent strength of our democratic polity has reasserted itself, and we are witnessing a new mood of constructive endeavour, disciplined work, and dedicated effort to revitalise and energise the major institutions of national development. It is imperative that the gains obtained during the period of emergency in defence of democratic values are consolidated and are not allowed to dissipate once the emergency is lifted.

We believe that it is time to think seriously about democracy and the functioning of democratic institutions of higher education and scientific research, in the spirit of earnest introspection and responsible reflection. We feel that the academic community has an obligation not only to preserve and strengthen the basic values of pursuit of knowledge and excellence, but also to play its crucial part in strengthening the democratic polity of India, by renewing its dedication to the national values of secularism, socialism and democracy.

The Conference, in pursuance of its deliberations, calls upon fellow educators, who subscribe to the values of secularism, socialism and democracy, to unite and work with courage and vision for the dissemination of these values, not only in the academic community but in the larger polity of India.

The Conference earnestly solicits the help of parents and fellow citizens in the movement for building an atmosphere conducive to the working of a secular, socialist democracy.

The Conference urges the respective authorities concerned with the problem of education that is, the Government of India, the State Governments, the University Grants Commission, the Central Advisory Board of Education etc. to:

- (a) transform education as an instrument of socio-economic change for the stabilisation of India as a secular, socialist democratic polity;
- (b) review the working of the colleges and universities in order to ascertain how far the national objectives are being observed in the formulation of syllabi, inclusion of text-books and the actual process of transmission of knowledge;
- (c) make suitable amendments to the Constitution in order to declare higher education as a concurrent subject in order to help the growth of a national accountability and national outlook in higher education;
- (d) abolition of the private management system in education, including minority colleges, as this

system has largely created exploitation and distortion of the national goal and has indeed obstructed growth of progressive, socialist and secular educational structure and instead proceed with the programme of nationalisation of education with a democratic pattern of management;

- (e) review the bureaucratic machinery responsible for helping the implementation of the national ideals in order to ascertain that those who are called upon to translate the national ideals in educational life are persons of commitment to the ideals of secularism, socialism and democracy;
- (f) institute teachers' training courses in order to help the teachers in articulating the ideals of secularism, socialism and democracy;
- (g) thoroughly revise the text-books and other reading material in colleges and universities in order to bring them in harmony with the propagation of the ideals of secularism, socialism and democracy. The possibility of establishing a national text-book board for preparation of text-books may be carefully examined;
- (h) take steps to establish an advisory board for the All India Radio and Television consisting of eminent educators committed to the ideals of secularism, socialism and democracy;
- (i) take measures to break the stranglehold of the monopolies of newspapers and put these papers under the charge of cooperatives of working journalists.

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# Relevance of Space Technology

PROF. U.R. RAO, Director, Indian Scientific Satellite Project delivered the sixth IAEC Endowment Lecture in memory of Sir M. Visvesvaraya. Dr. H. Narasimhaiah, Vice-Chancellor, Bangalore University presided. Dr. Rao said that for thousands of years, men have sought their future in the stormy sky. But it was Aryabhata, the ancient Indian astronomer who had first proclaimed about 1500 years ago that the earth is a relatively small planet spinning in space. With the launching of the first sputnik in 1957, the world saw the birth of a new 'Space Age'. To the scientist, the space techniques have provided a powerful new tool for exploring the universe around him with new windows and eyes. Space technology has fulfilled many old dreams of mankind. With the help of satellites and deep space probes, some of our widest visions and dreams, such as walking on the moon, close up pictures of Venus, Mars and Jupiter, Space docking near earth have been achieved. Detailed exploration of outer planets, investigation of life in its elementary form on Mars are the near-future possibilities.

The space research during the last two decades has provided new information and insight. For the first time it has been possible to investigate the composition of planetary atmospheres including their magnetic fields and the interaction that takes place between the solar wind and the planetary magnetospheres. The impact of the new technological innovation of space age is already being felt on the earth. For the first time in our history it has been possible to achieve a new dimension to combat the old and familiar problems mankind has been facing, namely disease, famine and ignorance through the use of space technology.

A purposeful and imaginative adoption of advanced space technology can initiate a total process of development in the country in the areas of mass communications and management of natural resources. It is now possible to have instantaneous communication from one part of the world to the other through satellite technology. It was through such a system that the world was able to watch the first steps on the moon and the Olympic games even as they were happening. It is through such a system that the medical doctors on the hospital ship S.S. Hope are able to keep in touch with medical libraries elsewhere in the world. It was through satellite communication that Nicaragua kept in contact with the outside world and arranged for emergency relief after the great earthquake in 1972. Satellite TV communication has virtually revolutionised the entire media of mass communication.

The need for obtaining global information on atmospheric circulation for accurate and advance forecasting of weather is becoming increasingly clear to all the weather scientists. Similarly, surveying of



Dr. U.R. Rao delivering the IAEC Endowment Lectures at the Bangalore University. Seated are : Vice-Chancellor Dr. H. Narasimhaiah and Sri N.K. Ayyangar of IAEC, Bangalore.

forest, agriculture, soil and mineral wealth and marine resources, which normally takes years to accomplish using conventional methods, can be done in a very short time using satellite technology. Cameras installed on space platforms can look at entire continents, detect land, water features and snow cover, movements of cloud and storms and transmit the relevant information instantaneously to the ground stations. Since these cameras can look at the earth through a wide range of the electromagnetic spectrum from visible to infrared, the pictures so obtained are far more informative than normal black and white pictures.

The developed nations have taken maximum advantage of satellite imagery due to their advanced technology. In case of developing countries these techniques too can really bring about a total revolution of knowledge and help in the optimal utilisation of resources. The judicious selection of both conventional and sophisticated techniques is essential to achieve a harmonious and meaningful development. In our everyday life use of satellite can effectively help in providing medical relief to rural areas, where advanced facilities may not be available. By transmitting electrocardiogram data from SHAR to Bangalore via the satellite, the concept of using satellites for transmitting medical data from one place to another where it can be evaluated to provide better medical advice has been tested in principle. Successful completion of these experiments and a few more planned for the next few months will provide valuable experience which can be readily employed for designing

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# Convocation

## Prof. Nurul Hasan Pleads for Self-Reliance

**PROF. NURUL HASAN**, Union Minister of Education, was the chief guest at the 13th convocation of the Indian Institute of Technology, Bombay. Dr. Raja Ramanna, Chairman of the Board of Governors, welcomed the Minister and outlined the activities and achievements of the institute. He said that the members of the faculty in addition to the main objectives of teaching and research had given their whole-hearted support and cooperation to the other activities of the institute and made some substantial contributions to national activities.

In his convocation address, Prof. Hassan said that the country could achieve self-reliance in industry through quick development and application of indigenous technology. He said that in certain matters like defence self-reliance is essential even for survival while in other sectors of economy it is still basic to national development. Referring to the import of foreign technology he said that it led to several drawbacks. In the first place the national industry is put to handicap as no country is ordinarily prepared to sell its best technology and one has therefore to be prepared to make do with obsolescent versions. The price for the import of such technology is also very high specially in terms of foreign exchange. The foreign technology being originally developed for an industrial environment is not always suitable for the developing conditions and what is worse, the import of such technology inhibits the development of indigenous knowhow and this leads to country's dependence on foreign expertise. The recent change in policy on import of technology would give a fillip to the indigenous know-how.

He said that in the post independence period our scientists and technologists have made several notable contributions and we have every right to be proud of their achievements. However in certain areas our performance has fallen short of our aspirations. The comparative neglect of the university system was obvious error which is being rectified now. He hoped that the gulf between the discovery of new technology and its actual utilisation for economic and commercial production would be soon bridged.

The Institutes of Technology have made significant contributions to fundamental research and have assisted in the development of the modern industrial sector through the training of highly skilled personnel. But their contribution to research in technology, to the development of indigenous know-how and to the building up of efficient consultative services for industry deserve greater attention. He assured adequate support from the Government and industry for this purpose.

If indigenous technology has to develop quickly to achieve self-reliance we have to take simultaneous and vigorous action on several fronts, some within educational system and some without. A very important measure would be to launch vigorous campaign to educate public opinion in a new Swadeshi Movement. We should never over-value foreign products and take legitimate pride in our manufactures. We should prefer products made with Indian know-how and Indian material.

Our policy with regard to import of technology is also changing. Wherever indigenous technology is available we use it invariably on priority basis and had not permitted the import of foreign technology. Our policy in industrial licensing is also being suitably modified to ensure that we do not purchase over and over again the sources.

The problem of the choice of technology assumes great significance in this context. We should not mechanically go in for capital-intensive and labour-saving technologies. Some of our basic problems however need the highest and most sophisticated technology for their solution. We should judge technology not only on the basis of their potential or profit for employment. Technology has far-reaching social, cultural and even moral implications and adequate attention has to be paid to increase the production.

The changes in public attitudes, industrial policies and entrepreneurial behaviour will have to be appropriately reflected in the educational and research institutions and in their relations with industry. We honour the classical scholar with his contributions for fundamental research but we should also honour and multiply another type of a scholar who prefers to do research on applied aspects and who has to his credit, not a large number of papers published in leading journals but a wide experience of development work of trouble shooting and of successful solution of problems in practical production. This will need a close linking of research and teaching institutions with industry. This can be achieved in a variety of ways. We should encourage the exchange of personnel between industry and the educational and research institutions so that a person whose main role is to teach or do research can also spend a certain specified time with industry and a person who is essentially working with industry will also be able to spend specified periods in research and teaching institutions. There should be good research and teaching institutions.

There should be good research and development units in industry or even better consultancy units in research and teaching institutions which could function in close collaboration with one another and frequently exchange their personnel. Industry must come forward with adequate financial support for the promotion of research and development and consultancy services in teaching and research institutions. It would also be desirable to associate competent entrepreneurs with teaching to assist good teachers and researchers who have developed some concrete projects to become entrepreneurs themselves rather than waiting indefinitely for some entrepreneurs to come along. Such a programme will change the present system where, entrepreneurs are mostly financiers and research and development persons are only researchers, advisors and consultants and create a new system wherein we shall have entrepreneurs with technological training and technological researchers with entrepreneurial experience. This will obviously stimulate the development of indigenous technology. This calls for a coordinated measure to be taken by the Government, industries in public and private sectors, research in educational institutions like universities, national laboratories and the Institutes of Technologies.

Dr. A. K. De, Director of the Institute while reading out the report of the institute said that suitable course programmes were under preparation and would be introduced in the under-graduate curriculum shortly.

The institute besides conferring degrees and diplomas on 487 students also conferred an honorary degree of Doctor of Science on the eminent nuclear scientist and Chairman of the Atomic Energy Commission, Dr. H. N. Sethna.

# FROM THE PRESS

## University Lecturers

*Dr. Sitaram Jayaswal, of Lucknow in his letter published in "The National Herald" says:*

The Uttar Pradesh Universities first statutes pertaining to superannuation, scales of pay and qualifications came into force on August 1. The basic qualifications for the post of a lecturer in the faculties of Art, Commerce, Science and Social Sciences are: (a) a doctorate in the subject of study concerned or a published work of a high standard in that subject; and (b) consistently good academic record with first class or high second class (B plus) Master's degree in the subject concerned or an equivalent degree of a foreign university in such subject.

It has been further laid down that if the selection committee is of opinion that the research work of a candidate is of a very high standard, it may relax any of the qualifications prescribed in sub-clause (b). Here lies the catch. It has been assumed by the framers of the statutes that a doctorate in a subject of study may not be of "a very high standard". The Selection Committee, if it is composed of such members as are inclined to do favour to some candidate may easily say that the doctorate of another suitable candidate who fulfils all the qualifications stated in sub-clause (a) and (b) may be rejected because his doctorate is not of a very high standard. The objectivity in qualifications laid down in (a) and (b) has been totally destroyed by this modification.

Another lacuna is that no mention has been made of the faculties of Education, Law, Medicine, etc. These are the faculties concerned with professional courses requiring special aptitude and not mere academic

qualifications. For example a lecturer in the department of teacher education where students are prepared for B.Ed. and M.Ed. degrees must have had a consistently good academic record at the graduate and post-graduate levels. In other words, he should be a second class graduate and post-graduate. There is no provision for M. Phil in many universities. So this may not be required till arrangements are made for this course. As regards high school and intermediate divisions they are irrelevant for they are affected by the immaturity of the adolescent period when students have no idea of their future career and are engaged more often in fun than in studies. If per chance a student gets third class in high school or intermediate because he was not aware of this future career at the time, why should he be punished now? Only when students enter degree colleges and universities they begin to think of their career. Therefore, it is perfectly just and proper to take into consideration the attainments beginning from degree classes only.

Many students belonging to backward and weaker sections of society will not be able to enter university services, if these qualifications are not relaxed at least in regard to high school and intermediate. Our Government is committed to providing equal opportunities to all sections. In these circumstances I wish to draw the attention of the Chancellor of UP Universities, the Chief Minister and the Minister for Higher Education to the need to modify these qualifications immediately so that injustice is not done to candidates who wish to be teacher educators, i.e., lecturers for B.Ed. and M.Ed. classes.

## Way to improve standards

*Mr. R. S. V. Rao of Madras in his letter to Editor published in "The Mail" says:*

The proposals and ideas of the new Vice-Chancellor of Madras University regarding higher education are welcome, but I wonder how far they will be practicable in the present context of tense political atmosphere and conflict of ideas and ideologies. I would request him to bear in mind what the Radhakrishnan Report says about university education:

"The Universities, are the organs of civilisation. If India is to confront the confusion of our time, she must turn for guidance to the men of letters and men of science, to her poets and artists, to her discoverers and inventors. These intellectual pioneers of civilisation are to be found and trained in the universities which are the sanctuaries of 'the inner life of the nation.' This is the essence of university education.

Whatever one might say and think about university education, it is certain that its standard has fallen deplorably low. The universities have been centres of political activities, rivalries and factions,

and subject to frequent closures, though the present emergency has improved matters. I request the Vice-Chancellor to pay immediate attention to this aspect and make the University independent, and not a department of the Government, to create more job opportunities to the educated unemployed whose number is swelling, to remove illiteracy in the country, a national disgrace after 28 years of independence, to afford facilities for more research work in various faculties, keep English as medium of instruction in higher education whatever may be the political pressure in and around and establish more autonomous colleges where quality and not quantity will be the prime factor.

## University Reorganisation

*R. S. Dangayach of Jaipur in his letter to Editor published in "The Indian Express" says:*

There should be a restructuring of the existing universities on a rational basis to ensure more effective and purposeful functioning. Rajasthan University, for instance has about 140 affiliated colleges all over the State. But the two other universities in Rajasthan

have only limited jurisdiction and are much smaller. This has made Rajasthan University much too unwieldy, and recently it had to divide the colleges under it in clusters. The logical solution to the problem would be to distribute the three universities on a regional basis. In recent years, the State Government had appointed two committees to go into the problems of higher education in the State; but significantly nothing has yet come out of their recommendations.

The University Grants Commission should also take follow-up action on the report of the Gajendragadkar Committee on governance of universities. It should lay down guidelines regarding the structure and constitution of university syndicates and executive councils. In line with the Central Government's policy on participative management for public sector units, these guidelines must also provide for representation of teachers on these bodies. This is essential because in some universities where such a provision was made only a year or two ago, it has now been scrapped.

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(Continued from Page 12)

future operation satellites having specific mission objectives.

The inauguration of Satellite Instructional Television Experiment (SITE) programme on 1st August in the country has marked yet another memorable milestone in our attempt at using satellite technology for taking audiovisual education to remote villages. The most important aspect of SITE is related to the direct reception of TV signals in remote villages. It is totally a new concept... 2400 community direct reception sets have been deployed in six clusters in six different states, namely, Karnataka, Andhra, Madhya Pradesh, Orissa, Bihar and Rajasthan. The programmes are transmitted to the satellite from the ground station at Ahmedabad. A new earth station at Delhi has been erected as a standby to the Ahmedabad station and also to receive satellite signals and redistribute in the vicinity of Delhi through conventional receivers.

The major question today is after SITE what is to be done in August 1975? The Indian Space Research

Organisation is exploring the other alternatives. The Symphonic Telecommunication Experiment Project (STEP) of the Space Research Organisation would be taking the help of a Franco-German Symphonic Satellite to provide new hardware know-how essential for our future communication satellite programme. The setting up of two transportable earth stations, one for telephony and one for TV and an earth station at Madras will give vital inputs to our future development. Funds permitting, the fabrication and launching of an Indian National Satellite for Communication and Television (INSAT) can be conceived in the near future.

In addition to the direct benefit from space technology in the areas of remote sensing, meteorology and communications, the spin off from space technology to the industrial and technological development of the nation is considerable. Space technology has practically revolutionised the electronic industry. The fabrication techniques have been remarkably changed and the applications of the technology are being freely made in various commercial fields.

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# Readers Write

## Decline of Standards— A Rejoinder

Sir—Kindly allow me the courtesy of the Readers Write columns to make the following comment on the letter of Mr. R. T. Parthsarthy on the Decline of Standards (*University News*, September 1975 issue). Quoting the Union Education Minister Mr. Parthsarthy argues that the subject of education, which hitherto has been within the jurisdiction of the state in our country should be included in the concurrent list so that the Central Government can frame uniform policy for education and the UGC can have unquestionable authority over the entire gamut of education. To Mr. Parthsarthy decentralisation of education seems to be one of the reasons for the present declining standards in college education.

On what assumptions, Mr. Parthsarthy thinks so I do not know. May be he is carried away by his enthusiasm for a uniform policy, pattern and syllabus in college education. May be he does not like the mushroom growth of colleges in the mofussil area of the country and perhaps because of this, towards the end of his letter, he argues that higher education can not be claimed as a fundamental right and that it can not be for all.

What do we want to do by making education a concurrent subject, and thereby allowing the Central Government and the UGC to have supreme sway over the field? In a country like ours with its various trends of culture and different regional languages the centralisation of college education would be one of the gravest mistakes we would be ever committing. We have created UGC to look after higher education in the country.

We have also bestowed autonomy on universities. To impose an uniform policy throughout the country will be the very negation of the university autonomy. Rather it is one of the functions of the UGC and the Centre to sharpen the concept of university autonomy, so that universities by themselves can make bold experiments in the field of higher education. What is sad today is that even our universities are gradually succumbing to the dictates of the UGC and the Centre. I do not mean to say that universities should always raise their horns against their counterparts at the other and higher end. What I plead is the healthy differences which must culminate into something fruitful and useful to the cause of higher education.

Mr. Parthsarthy has made an exception of universities like Delhi, Bombay and Calcutta from other universities in the country so far as the decline of educational standards at college level are concerned. That is all right. Cities like Bombay, Calcutta, Madras and Delhi are themselves universities. If the students—and teachers as well—of the universities are a little more refined and look more perky it is, I am afraid, not because of the universities, but largely because of the cities. The cities provide them unique facilities which are obviously denied to the teacher and the taught in rural colleges and universities. In a country like ours where majority of the colleges and universities are located in the mofussil area and smaller towns this particular difference, both in the refinement of education and to a certain extent, in the standard also, is bound to persist for a long time to come.

One of the unfortunate and degrading things in the field of higher education still in our country is its measurement in terms of English language. The universities Mr. Parthsarthy has pointed out have still English as the medium of their higher education. These universities have their own circumstances and special reasons to keep English. That is not something to say against them. What one would like to criticise is our attitude. While most of the universities impart their education in the languages of the region where they are situated—and even there English indeed should be nicely taught and due importance should be given to the language—we have not mentally accorded due respect to our own languages.

This is not pleading that universities doing their teaching work in the regional languages have maintained and kept up their standards. What is pointed out is that the decline in the standards is everywhere and the universities pointed out by Mr. Parthsarthy are no exceptions to that. What gives them the exception is English language which comparatively is better spoken and written in the area of their jurisdiction by virtue of their special locations.

Mr. Parthsarthy does not want university education to be meant for all. This is also a negation of a right to higher education. But what I agree here with Mr. Parthsarthy is a suggestion inherent in his argument that standards all over the country should be kept up and there must be some discipline at the entrance. Higher education is not meant for all in the sense that even as all young men and women in an athletic meet can not be participants, say, in a thousand metre running race—if they want to be they have to fulfill the minimum standard of fitness of health—doors can not be, and should not be flung wide open for all in higher education.

As for the decline in the standards Mr. Parthsarthy has not said anything about the role the politicians have played in it. In the preceding years the overall analysis would point out that politicians in general have largely been responsible in making the students mind stray away from the path of peaceful study. Our political parties have played havoc in disturbing the academic atmosphere which is the first prerequisite for qualitative higher education.

Even today those who advocate franchise at the age of 18 have their eye on our campuses. They are advocating the franchise not so much as to make the young men and women responsible participants in the process of democracy as 'to catch them young'.

To streamline college and university standards the political atmosphere in the country has to be streamlined first. College and university education should be made available to those who have aptitude and inclination for that. For this, standards both at the entrance and at the degree and post-graduate degree should be made strict. Teachers should be provided with all teaching and study facilities so that they would be able to impart what they want to impart to the best of their abilities. This together with peaceful academic campus—if we could guarantee this to ourselves for a long time—could safely help us upgrade present standards.

Mr. Parthvarthy likes emergency to be used for taking over education from the states to the Centre. But we should not make haste in this also. Let the country debate the issue first and exhaustively. Why should education, a field of ideas, be victimised like that? After all in democracy it is not somebody else who would think on behalf of us. The thinking and arriving at decisions would have to be done by us—which too would be a process of higher education.

**NARESH UMRIGAR**  
Bardoli (Surat)

## **Idleness Unlimited**

Sir—Prof. Amrik Singh's leading article this month (*University News*, October 1975) omits one important and relevant fact. Most teachers do not have a place to work in their colleges—not even a desk or a shelf such as every lower division clerk has. Don't we need very radical change in college architecture to ensure cubicles for teachers and improvement in college administration to ensure long working hours for libraries and laboratories? Some readjustment of existing resources and some additional resources to the end is called for.

**DR. S.C. SHULKA**

New Delhi

## **Research facilities**

Sir,—Implementation of the new pay scale implies a condition of additional research qualifications for lecturers in terms of M. Phil. or Ph.D. or equivalent published work. Those already in the profession have to acquire these qualifications within five years in order to enjoy increments beyond the specified time-limit. For lecturers in residential universities it is easier because of the better facilities available there. But in the case of affiliating universities and colleges, lacking such research facilities, there will be a difficult situation.

Responsibility cannot be thrown entirely on teachers without involving the dangers of sub-standard work, neglect of

teaching responsibilities, mal-practices and erosion of academic values. Laying down of the condition by the Government likewise involves some responsibility for providing facilities.

Under the UGC scheme of help to retired teachers for continuing their research work, a number of experienced and active research workers are there. This pool is renewed every year. The affiliating universities and colleges can formulate a programme for utilising their services for meeting the situation. The affiliating universities can appoint them on 'term basis' as professors or associates or fellows and place them according to the needs of colleges or partly at university headquarters. The financial aspect can be managed with a bit of constructive planning. The UGC provides Rs. 500 p.m. and Rs. 1,000 a year for contingency. Besides, they permit additional emoluments to the extent of Rs. 4,000 per annum by institutions for the additional work they contribute to teaching, seminars and other similar work. Colleges can partly meet the cost through regular fees from research workers. Arrangements for proper guidance made available in colleges through such schemes would seem academically sound, operationally feasible and financially viable.

Organizational responsibility can be better shouldered by universities through 'sponsorship programmes'. UGC university and college resources should be pooled.

**D.S. CHAUHAN**  
Bainda

# Round Up

## Basic Sciences & Agriculture

THE Indian National Science Academy organised a symposium on 'Basic Sciences and Agriculture' on October 11-13, 1975 under the Chairmanship of Dr B. P. Pal. Dr M. R. N. Prasad of Delhi University was the Co-convenor.

The objective of the symposium was to highlight and stress the importance of basic research to the development of agriculture and to focus attention on the obvious but not adequately recognised fact that it is only through advances made in basic research that applied research and technology become feasible.

Twenty-nine papers were presented and discussed at six sessions of the symposium which covered various aspects of Basic Sciences and Agriculture, namely, Genetics, Embryology, Tissue Culture, Chronobiology, Meteorology, Photosynthesis and Plant Physiology, Chemistry, Physics, Mathematics and Zoology in relation to Agriculture. The following recommendations were adopted:

1. In order to provide the needed genetic variability to breeders it is necessary to create more extensive facilities for the collection, conservation and utilisation of genetic resources both in plants and animals including fish. It would also be necessary for this purpose to have Agricultural Counsellors attached to Indian Embassies in important world centres of origin and diversity of domesticated plants and animals.

2. The frontiers in the exploitation of genetic variability in plants should be extended to the inter-genetic and higher levels and for this purpose there has to be more support for research on immunology, somatic cell hybridization and protoplast culture.

3. The existing plant breeding procedures must be further expanded so as to include techniques like raising plants from pollen grains through artificial culture, induction of mutations at the cellular level and the introduction of a nutritional dimension to crop improvement projects. The production of haploids containing half the number of chromosomes could be particularly valuable in plantation crops like tea and rubber for exploiting hybrid vigour.

4. Physiological traits relating to growth and development, photosynthetic efficiency, behaviour under stress conditions and better partitioning of the total dry matter so as to increase the economic yield should be included in the plant breeding programmes and for this purpose more support should be given to physiological research.

5. The entire area of biological nitrogen fixation requires more scientific attention. Both symbiotic and non-symbiotic nitrogen fixation should be studied. One or two well-equipped laboratories should be set up for research on the transference of nitrogen fixing genes from legumes to cereals and other crops. The molecular basis of nitrogen fixation should also be studied in greater detail since this will also help to improve fertilizer production technology.

6. There is need for an intensive survey of the micronutrient status of our soils since this has implications for plant, animal and human nutrition.

7. Research on the development of integrated pest control procedures in order to minimise the use of chemical pesticides needs intensification. A systematic collection of parasites and predators

of important pests is necessary. Also, there has to be a closer linkage with the Meteorological Department in order to understand the effects of the micro-and macro-environments in pest and disease outbreaks. The work done at the Indian Agricultural Research Institute on forecasting the incidence of the rust disease of wheat should be intensified and extended to cover all parts of the country.

8. Basic research as applied to perennial plants and plantation crops has lagged far behind. There is need to take up more intensive research on the genetics, physiology and breeding of all important plantation crops.

9. More research is needed on the reproductive cycles of rodents and birds in order to develop suitable control strategies. Extensive use of chemicals should not be the primary method of control of vertebrate pests. A study of economic ornithology should be encouraged in order to promote the concept of ecological balance.

10. The whole area of aquaculture, both in inland ponds and along our long coastal belt, needs to be promoted. There is need for more research on environmental regulation of spawning in fish and the hormone regulation and induced breeding techniques already standardised should be popularised. There is also urgent need for more research on fish nutrition and on sewage water and brackish water fish farming.

11. More intensive and extensive studies are needed on the effects of environmental pollution on animal and plant life with particular reference to agriculture and human health.

12. More research on the application of bio-physical tools involving appropriate equipment is needed. For this purpose a few well-equipped laboratories which could also help other research workers in getting their material analysed should be set up. A proper instrumentation service and repair and maintenance facility should be created in different parts of the country.

13. Computer simulation models of cropping systems, disease and pests incidence and growth and development should be prepared at a few centres in cooperation with the Agricultural Universities and Research Institutes.

14. The area of agro-meteorology with specific reference to yield forecasting, crop planning, mid-season corrections in cropping patterns and weather modification requires more intensive research.

15. The participants in the Symposium emphasised that unless certain basic changes are made in employment, research support and fellowship awarding policies, it may not be possible to attract brilliant students to take to basic research over a long period of time. While a multi-disciplinary approach is essential for achieving significant success in basic research, the employment policies usually come in the way of getting suitable job opportunities for scientists who have worked in inter-phases like bio-physics, life sciences, etc. Already the students who have taken degrees from life sciences find it difficult to be accepted by Botany and Zoology Departments of Universities. Therefore, all the major science organisations in the country will have to give thought to their Fellowship and personnel policies. The personnel policies should enable a scientist to work throughout his career on a specific problem without having to change his/her job just for the purpose of getting additional pay.

16. The qualitative and quantitative use of the infrared radiations scattered by plants for monitoring their health and vigour constitutes the applications of remote sensing to agriculture. University Departments of Physics and Biology could help to undertake studies on spectral analysis of crops under normal and stress conditions of crop growth. Such data would enable National Remote Sensing Agency to undertake "ground truth" studies quickly in the field.

17. The participants at the Symposium recommended that the President of the Indian National Science Academy should convene

a meeting of the Heads of the major scientific organisations and of the University Grants Commission to examine the recommendations made at the Symposium and take appropriate follow-up action. It was emphasised that unless the country makes a major effort in intensifying mission-oriented basic research, we will be left far behind in the world of science and technology and it may become impossible to get more and more food from diminishing availability of land for agriculture

### Centre of Advanced Study of PAU

THE Indian Council of Agricultural Research in collaboration with the UNESCO has set up a centre of advanced study in the agricultural engineering college in Punjab Agricultural University. The centre would offer five areas of specialisation—agricultural mechanisation, water resources management, postharvest technology, structures and environment control and new energy resources. Teaching and research programmes in these subjects could be strengthened through develop-

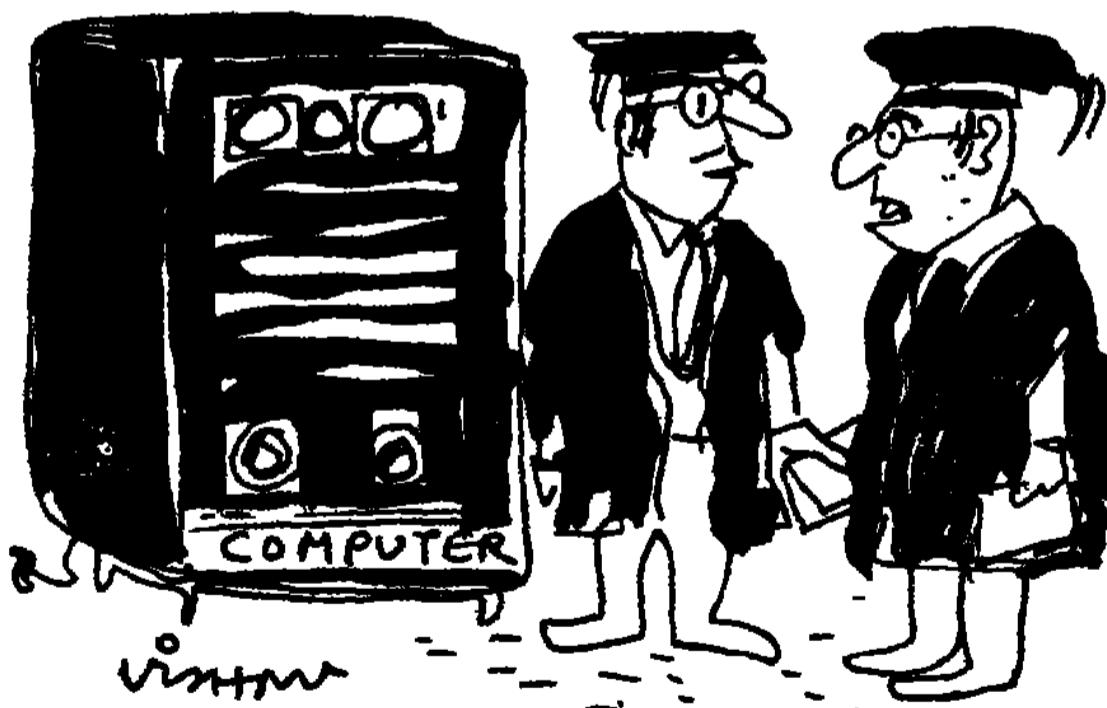
ment and recruitment of staff. Already twelve members of the faculty have been awarded training fellowships under these programmes. The centre will also offer eight doctoral fellowships and eight post-doctoral fellowships of the Indian Council of Agricultural Research every year on different fields of studies.

### Computers at UPSC

THE Union Public Service Commission has decided to computerise its data processing system to cope with the increasingly large number of applications for the competitive examinations as well as selections by interviews. The Indian Statistical Institute will act as consultant to the Commission in designing a computerised data processing system. A team of computer experts from the institute had preliminary discussions in this regard and would be submitting a report by the end of November on the new design of application forms and processing of applications up to the examination stage.

### Curbing Drug Addiction

THE world health centre of Delhi



"One of the students' demands is that we lend them our Computer so that they can work out which questions will be set for their exams....."

University has suggested that medical check-up of students of colleges and the university be made regularly. This decision was taken at the Working Committee meeting which met to discuss the high incidence of drug abuse on the campus. A series of meetings of the college wardens and principals were arranged to discuss these problems earlier. The college authorities have been advised to be more vigilant and to discourage any such harmful tendency in students. It has been found that the drug addiction is generally prevalent among the more affluent and better educated students who appeared to be more frustrated.

The college authorities have also been asked to initiate strict measures to check the formation of centres of such activities.

### **Utkal Correspondence Courses**

THE Utkal University has started a series of correspondence courses for its degree examinations. The number enrolled are 593 for arts courses. About eight per cent of the students for the courses belong to the rural areas. Eighty two per cent are from those who are unemployed.

### **University Homoeopathic Courses**

THE Calcutta University Syndicate decided to start a five-year homoeopathic course in medicine and surgery from the next session. For this purpose four colleges, two in Calcutta and one each at Midnapore and Howrah have been given recognition. This would be the first full-fledged degree course in homoeopathic medicine to be started by any university in the country.

To start with the colleges would be permitted to admit the students with science subjects in the school final or equivalent examinations. They will be admitted to the pre-medical and Part I first year of Homeo BMS course. The Syndi-

cate also decided to appoint an ad hoc committee for the management of Bengal Music College, the only music college under the Calcutta University which offers degree course in Music.

### **Mysore Centre for Commonwealth Literature**

THE Mysore University Senate approved a scheme for starting a post-graduate course in agricultural marketing and management in the University's Institute of Developmental studies. The State Marketing Board will provide the necessary financial assistance.

The Senate also approved a proposal to establish a centre for commonwealth literature and research and a scheme for starting a semester certificate course on seed pathology. A post-graduate diploma course in education would also be instituted along with a post-graduate certificate course. Provision has also been made for starting diploma course in Gandhian studies.

### **IIT Madras**

THE Indian Institute of Technology, Madras, is re-orienting its research development programmes and re-structuring its administrative set up. Dr. K.A.V. Pandalai, Director of the Institute said that the reorganisation would provide proper facilities which are of practical and functional utility and relevance to the national needs and reforms. The institute is setting up a centre for design and development of machinery and equipment now being imported. The accent would now be to develop equipment needed for export-oriented industries such as leather and electronics. The centre would also create sufficient manpower in design technology.

Prof. M. C. Gupta, Head of the Solar Energy Research Laboratory of the institute is keen to channelise the indigenously developed technology for heating water for domestic and commercial purposes. Heating and cooling of home and factories, drying of agricultural produce for processing and storage and provid-

ing drinking water from brackish and saline water to village communities are some of the areas identified by him for immediate application of solar power. The institute has formulated a proposal for the design and development of a solar power generator for a small rural community. The institute has also developed and successfully tested solar water heaters and agricultural dryers.

### **NCST to have closer link with Planning Commission**

THE re-constituted National Committee on Science and Technology (NCST) will now have a closer link with the Planning Commission so that the science and technology plan could be matched with the general plans. The new committee has 23 members including heads of various scientific agencies. The committee after prolonged discussions has decided to devote special attention to those areas of science and technology which though relevant to the development of the country had been so far neglected. They related specifically to research on forestry and oceanography.

### **CSIR Projects for Kerala**

THE Council of Scientific and Industrial Research will set up in Kerala a complex of units of some national laboratories with an initial investment of rupees two crores.

These units will be set up in two campuses, one at Cochin and the other at Trivandrum. They will help in accelerating industrialisation of the State with the technical know-how developed in various laboratories. The Kerala Government has agreed to pay rupees one crore for the complex and the remaining expenditure would be borne by the Council. The work on the complex is expected to be completed in two years time. During the first phase of the project units of five important national laboratories will be set up. They are : The Central Glass and Ceramics Research Institute, Calcutta, (ii) the Central Food Technological Research Institute,

Mysore, (iii) the Central Mechanical Engineering Research Institute, Durgapur, (iv) the Central Scientific Instruments Organisation, Chandigarh, and (v) the National Environment Research Institute, Nagpur.

During the second phase units of some other laboratories like National Metallurgical Laboratory, Jamshedpur, the Structural Engineering Research Centre and the Central Building Research Institute, Roorkee will be set up.

### **Electronic Devices for Plant Breeding**

THE Punjab Agricultural University is now using electronic instruments for the analysis of plant samples. The instruments spark omission spectrometer, can determine the status of phosphorous, potassium, calcium, magnesium, zinc, copper, boron, iron, and manganese, all of which are necessary for the health of plants. As many as 200 samples can be analysed in a day.

With the help of this electronic device, a nutrient indexing survey for wheat was undertaken in five selected villages. The survey showed that 51% of the soils were deficient in zinc and 16% in copper. These soils which had only marginal status in some of the elements could become deficient at any time. Similar surveys have been undertaken for paddy in Amritsar and Gurdaspur districts, for rice in Sangrur and Bhatinda districts and for groundnut in Ludhiana and Kapurthala districts. The results of these surveys are to be tabulated and it is planned to undertake periodic studies on the soils to monitor changes in their soil fertility and fertiliser use.

### **New Agricultural Research Services**

THE Union Government has decided to create the Agricultural

Research Services (ARS) on the model of the Indian Administrative Service. A separate selection board has been set up for recruiting personnel for this new service. The step would help to streamline recruitment of research scientists for the Indian Council of Agricultural Research and allied organisations. The new service is likely to be started from 2nd October of this year.

### **New NIS Hostel**

THE National Institute of Sports, Patiala, would soon be constructing a new hostel to accommodate the increased rush of national coaching camps which are organised by the Institute round the year. The new hostel would be built at a cost of Rupees fifteen lakhs and will provide accommodation for over hundred athletes. The institute would be arranging the first coaching camp in Athletics for the preparation of national contingent for the 1976 Montreal Olympics.

### **Kakatiya & Guntur Varsities**

MR M.V. KRISHNA RAO, Education Minister of Andhra Pradesh while addressing the staff of Warangal said that the Ceuta would soon be upgraded and formed into Kakatiya University. Another university would be established at Guntur. The state Government would soon hold discussions with the Union Minister of Education in this regard.

### **Calcutta Varsity Campus for Agartala**

A UNIVERSITY Grants Commission team visited Agartala to examine the proposal of the Tripura Government to open a campus of the Calcutta University for teaching and holding examination at post-graduate level.

The Tripura administration had applied to the university to give permission for starting of post-graduate course in arts subjects. The

Calcutta University has already approved the proposal subject to the concurrence of the University Grants Commission.

### **Credit System for C U Examinations**

DR. P.K. BOSE, Pro-Vice-Chancellor of Calcutta University has made a strong proposal for introducing 'credit system' in degree course examinations of the university as a part of the examination reforms. It has also been proposed to extend this system to the post-graduate examinations in the university.

Under the scheme any student securing a score of up to 33% in a subject will get a credit-0; any student securing between 34% and 59% will get credit-1. For a score of between 60% and 100% the credit will be-2. In each subject in each part a student must secure at least credit-1 in order to qualify (in the case of science subjects, practical and theoretical will be regarded as separate subjects). Credit once earned in any subject in any part will continue for a period of at least 5 years. If the student desires he can appear more than once in one subject in order to better his record. For each examination credit certificate for each subject will be issued to the candidates. When a candidate earns all credits, both for part I and Part II, a diploma will be issued to the candidate by the university.

The scheme further envisages that once a student completes his period of continuous training for three years he need not attend any college for his subsequent examinations. But if he chooses he can attend some classes in any college by paying four month's tuition fee.

### **International Women Year's Activities**

A NUMBER of programmes have bee organised and planned for the observance of the inter-

national women year at the S.N.D.T. Women's University, Bombay. The Committee under the chairmanship of Dr. (Mrs) Madhuri R. Shah, Vice-Chancellor, will plan and review the programmes of the activities undertaken from time to time. An information cell has been set up at the Research Unit on women studies at the university. The following publications would be brought out:

- (i) A Handbook on Women in India has already been published & the research under women studies, which gives basic data about some of the areas of concern to women.
- (ii) A bibliography of women is under publication.
- (iii) A quarterly newsletter 'Parashakti' is being published by the university regularly.
- (iv) Gujarati and Marathi translations of the synopsis of the Report of the National Committee on the status of women in India have been undertaken by the university and would be published during the year.
- (v) The Indian Council of Social Science Research has decided to edit the research studies conducted on behalf of the National Committee on the status of women and get them published during the international women year. The university will be publishing four volumes which are under preparation by the ICSSR on the following topics :
  - (a) Legal status of women
  - (b) Political status of women
  - (c) Social Institutions and the status of women
  - (d) Issues in women's education
- (vi) The special international women's programme has made strong impact and has been appreciated by the participants. The

group discussions arranged 'In quest of status' were found to be very useful. Three such group discussions have already been arranged. In the first two groups, women from forty different professions participated and discussed the difficulties experienced by them in the discharge of their professional duties as well as in their home. In the third group, educated women who are not working at present but who had worked in the past and have now given up their work and honorary social workers, took part in discussions and brought forward many suggestions about improving their status. The fourth group will cover women belonging to the labour class and those working in fields and factories and are self-employed.

### Konkan Projects

A FEW lakh rupees project of the Konkan Agriculture University will be located at Kosabhad in Dahanu-taluka of Thana district. The Central Government has given the clearance recently. The proposed project would include research and extension education in agriculture and allied subjects, undertaking new technique of cultivation to increase production and also for the welfare of the farmers. The university ever since its inception in 1972 had conducted many experiments 'Jumbo Prawns' had been cultured under laboratory conditions for the first time in the country. Many new avenues for fish-cum-prawn culture in the State have been organised.

The university proposes to acquire eight thousand hectares of land near Dapoli. 1250 hectares will be for agricultural purposes and 125 hectares would be utilised for rehabilitation of agricultural families.

### Nehru Literacy Awards

DR. M.S. MEHTA, former Vice-Chancellor of Rajasthan University has been awarded the Nehru Literacy Award for 1975 in recognition of his outstanding contributions to the promotion of literacy and for distinguished leadership in adult education in India. A department of Adult Education was for the first time established in Indian University at Jaipur during his tenure.

Dr. Mehta has been the President of the Indian Adult Education Association for over fifteen years. He has brought about a number of changes in the field of education through Vidya Bhawan, Udaipur. He was awarded the Tolley Medal of Syracuse University in 1969. He has also been the recipient of the ASPBA Award for promotion of Adult Education in the Asian South Pacific Region. Dr. Mehta was given Padma Vibhushan in 1969.

The Nehru Literacy Award has been instituted by the Indian Adult Education Association.

### Uttar Pradesh Lays Down Sports Guidelines

THE UP Government recently laid down conditions for the sanction of financial and other assistance for its sports organisations. This decision has been taken in the interest of raising standard of sports and games.

No person can now hold the office of the President, Vice-President, Treasurer, Secretary or Secretary-General or any corresponding office in the state organisation consecutively for more than one term of three years or at the most two terms of six years. The annual accounts of the State Organisation would be properly maintained and audited. Business meetings of these organisations would also be held regularly. Each State Organisation would be required to appoint national coaches with the prior approval of the State Sports Department.

## **University for Manipur**

THE question of the establishment of a university in Manipur is under consideration of the University Grants Commission. The Question was again discussed with the team which visited Imphal recently. An All-India Centre for the study of Burmese is likely to be established soon.

## **Avadh University Inaugurated**

SHRI H. N. BAHUGUNA, the Chief Minister of Uttar Pradesh, inaugurated the first session of the Avadh University on September 1 1975. He urged the educationists to improve the educational system and make it more useful and relevant to the present day needs of society. He said that the Government was considering to make one month national service compulsory in College.

Dr. Surendra Singh, Vice-Chancellor, in his welcome address said that the university would soon establish institutes of journalism, tourism, photography and start various job-oriented courses. Greetings and messages were received from the universities in the country and abroad.

## **Rare Manuscripts in Kurukshetra Library**

THE Kurukshetra University library has a valuable collection of over 1,38,000 books on different subjects in Hindi, English, Urdu and other languages. But its collection of 4,500 rare old manuscripts relating to ancient history, culture, civilization, literature and religion, are worth mentioning. Some of these manuscripts date as far back as 17th century. These manuscripts have either been donated as free gifts or have been acquired on payment for the benefit of the research scholars. Cataloguing of the manuscripts is in progress. A devoted and dedicated multilingual septuagenarian has been entrusted with the upkeep and maintenance of this

precious record which includes a 175-year old illustrated manuscript of the Bhagwad Gita, a 230-year old manuscript of Panchtantra, 165-year old Persian translation of Yogavasistha, a 200-year old Kartavirya Vidhi, 300-year old Narharitikka of Naishad Charit and a manuscript of the holy Koran in pictorial form which was found from the famous Mughal Courtier Birbal's palace in Rewari.

What strikes one most is the durability of the hand made paper and the sparkling brightness of the ink used for the manuscripts which have stood the ravages of time and weather exceedingly well. A search for new manuscripts continues unabated and a book bank has been started for attracting public spirited owners of such works to deposit their collections with the library on returnable basis. Arrangements have also been made for the preservation of manuscripts at the owners premises free of cost on the condition that intimation would be given to the library whenever such a manuscript changes hands.

## **U.G.C. Fellowships for Teachers**

THE University Grants Commission under the Faculty Improvement Scheme would provide fellowships to teachers who keep themselves abreast of modern developments in teaching and research. Fellowships would be available to work for M. Phil, M. Litt or a Ph. D. degree. There will be two types of fellowships—a short term fellowship for year and another for three years. Teachers will have to be sponsored through their colleges, which will be required to protect their salaries for the duration of their leave. Colleges will also have to give an undertaking that the teacher will be taken back without any set back in his or her seniority. The teachers on the other hand will be required to give an undertaking to the college that, on their return, they will continue teaching for atleast five years.

The U.G.C. will provide

adequate funds to the colleges for replacement of lecturers for the period of study leave. The teacher getting a fellowship will be given Rs 250 a month by the U.G.C. if he or she has to study at a place outside the place of duty. In addition, a maintenance grant of Rs. 1,000 a year to the university or institute where a teacher does his research.

Teachers from affiliated colleges selected for long term fellowships will be preferred if they are under 35 years of age. For the short term fellowships, teachers will have to be below 45 years. The cases of senior teachers will also be considered on merit.

## **Education Research Centre**

AN Education Research Centre has been recently established at Juhu to promote and carry out research in various spheres of education. The centre aims at promoting research in subjects like vocational guidance, handling of problem children, after school activities, saving habits and memory training. These subjects are of some significance in the application in educational institutions

The centre is headed by Dr. (Mrs) Madhuri Shah, Vice-Chancellor of the S.N.D.T. Women's University. Mr. K.S. Vaz would be the co-ordinator. An Advisory Board consisting of Dr. N. Kothare, Dr (Miss) M. Bengalie add Dr. (Miss) Nekhooda and Mrs. Amritlal will conduct research on after school activities. The research programme of the centre will include training of research scholars.

A team of psychologists would research in memory training. The centre proposes to set up model institutions of primary and secondary schools and colleges the curricula of which will be based on the findings of the research carried out at the centre. A continuous rapport would be established between the research centre and the educational institutions which should be invited to benefit from its work.

## **Students for CU Senate**

THE Government of West Bengal had appointed a select committee under the chairmanship of Mr. M. Banerjee, Education Minister to study the question of student participation in the university administration. The committee in its report has recommended that 10 to 15% of the total number of seats in the Senate or the policy making body of the universities be allotted to students. A provision has been made for nomination of good students from different faculties. The 19-member select committee had met the Vice-Chancellors of universities, principals of colleges, teacher representatives and different student organisations in order to ascertain their opinion on this vital issue before finalising the report.

Kerala, Rajasthan and Gujarat are some of the other universities where the students have representation on the university bodies. In Kerala the student representatives are however elected to the Senate.

## **Uranium Located in U.P.**

PROFESSOR V.L.S. Bhimasankaram, Head of the Geophysics Department of Osmania University recently announced that a very rich radio-active mineralized zone with a high percentage of uranium content has been discovered by the centre of exploration of geophysics, in the Lalitpur District of Uttar Pradesh. The Centre, he said, had perfected a new methodology for ground water investigations particularly in hard rock areas.

Under Indo-Soviet collaboration the centre was first started in 1969 for a period of five years and undertook several projects of immediate benefit for the economy of the country. Mr. P. Jaganmohan Reddy, the Vice-Chancellor of the university who visited USSR in connection with the General Assembly meeting of the International Association of Universities held discussions with the Moscow Institute of Geological Prospecting about further collaboration with the university. The

life of the centre has been further extended by another five years.

## **College Seminar on Physical Education**

THE Tamil Nadu Collegiate Physical Education Association organised a two-day seminar at the World University Centre Auditorium in Madras. Mr. V.R. Nedunchezhian, State Education Minister was the chief guest. In his inaugural address the Minister assured the participants that any practical scheme worked out by them to make physical education a part of the collegiate curriculum would be welcome. But he urged the delegates to examine the issue from all aspects. It was very necessary that the youth should have proper training in physical education at an early stage of their career. This training would make them well equipped physically and mentally to take up the challenge of the life both on the sports field and in other spheres. Mr. S. Subramaniam, President of the Association, in his welcome address made a strong plea to make physical education at least an optional subject in the initial stages of university education. He called for the creation of separate cell in the Directorate of Education so that the needs, interests and problems of physical education in colleges might be looked after efficiently and sympathetically.

## **Pantnagar Hill Campus**

A RUPEES five crores hill campus of the Pantnagar Agricultural University will be set up soon at Narendra Nagar in the Tehri-Garhwal District of Uttar Pradesh. The State Government has already acquired two thousand acres of forest and other land for establishing this campus where research on the development of agriculture, animal husbandry, forestry and horticulture would be undertaken.

A 1250-tonne capacity sugar factory will also be set up at Pantnagar university. The factory would be able to crush sugarcane with sugar beet. It is expected to

change the pattern of production in this area.

According to Shri S. P. Pande, Vice-chancellor of the university, the profit from the university farm had increased from Rs. 72 lakhs in 1972-73 to Rs. 1.24 crores in 1974-75. The farm was expected to make a profit of Rs. 1.4 crores this year. The maximum profit from farm was from the wheat sold as seed.

## **Vikramshila Excavations**

DR. B.S. VERMA of Bhagalpur university is conducting the archaeological excavations at Antichak which are expected to lead to the remains of the ancient Vikramshila University founded by King Dharmapala of the Pala dynasty. The project has made considerable progress. The controversy over the existence of the university would continue until any document offering conclusive proof is discovered. A number of circumstantial evidences however have been collected during the excavations. The Tibetan manuscripts are the main source material on which the reliance has been made. The ancient manuscript have referred to a monolithic figure of Mahabodhi shrine which was attached to the central shrine. The recent discovery of the stone-head of Lord Buddha was the detached part of the Mahabodhi figure under reference.

## **Panel discussion on Science Policy**

THE Andhra Pradesh Science Academy organised a panel discussion on Science Policy at Hyderabad on October 17, 1975. Prof. Bhagavantham, Chairman of the Committee on Science and Technology in developing countries inaugurated the discussions. He said that in a developing country the real focus of science education and application of science and technology should be the satisfaction of the basic human needs, such as food, clothing, shelter and removal of illiteracy.

He said that approximately 90% of the scientific research potential of the world was today

concentrated in industrialised countries. In developing countries the fruits of science and technology had still to be gathered.

The special feature of the discussion was that while the scientists belonging to the older generation posed the problems relating to science education, scientific research, natural resources and industrial development, the younger scientists debated in various sessions and offered their comments on the various solutions to the problems.

### NSS volunteers eligible for Commonwealth Award

MR. JIWAN TEWARI, Deputy Programme Adviser, NSS, Northern India, while addressing the NSS camp in Patiala, announced that now onwards the participation in Youth Against Dirt and Disease camps would make students eligible for the various youth programmes for the Commonwealth youth services award. The work done by college students under the NSS programmes would be assessed by the National Award Panel. Their utility to the community and its scope for expansion to other areas would also be periodically reviewed.

A ten-day camp was recently organised by Dr. S.S. Bir, Dean Academic Affairs, Punjabi Univer-

sity. Twenty camps involving 1200 students were started simultaneously in 26 villages under the jurisdiction of Punjabi University.

### NIS South Centre

THE committee set up by the Bangalore University to recommend a site for the NIS South Centre has decided to recommend to the Syndicate to make available about 12 hectares of levelled land and 18 hectares of land across the stream in the new campus of the university. It is expected that the Syndicate would approve these recommendations and the work of constructing playgrounds and other buildings would be taken up soon.

The Karnataka Government has in the meanwhile granted Rs 23 lakhs and the Central Government has provided Rs 18 lakhs under the Fifth Plan for the development of the centre. It is proposed to build Tennis and Basketball courts, Cricket, Hockey, Football and Volleyball grounds on the new site. Diploma courses in these six games would also be instituted soon.

### HP Study Centre at Bangalore

THE Himachal Pradesh University would open a study centre in Bangalore for the benefit of the

students taking correspondence course of the university. The university's personal contact programme centre would soon become a centre of post-graduate examination. The Himachal Pradesh University has started a novel non-degree course for those who want to acquire up-to-date knowledge on academic subjects. The university would admit to this course persons willing to have such knowledge irrespective of their educational qualifications.

### Personal

AT the invitation of the British Council Shri S.V. Chittibabu, Vice-Chancellor of Madurai University would be studying the educational goals and practices of the Open University and other institutes of continuing education as well as centres of science education specially in innovative science and humanities programmes in England.

\* \* \*  
Shri S.C. Singha has been appointed Vice-Chancellor of Faizabad Agricultural University.

\* \* \*  
Prof. J.J. Chinoy, former Director of Gujarat University's School of Sciences has been awarded a gold medal at the International Science Congress meeting held at Leningrad.

\* \* \*  
Dr. S.M. Dasgupta has taken over as the Director of the National Institute for Training in Industrial Engineering.

\* \* \*  
Dr. Fakruddin Ali Ahmad, Head of the Department of Geology, Aligarh Muslim University, has been appointed Mineral Commissioner by the Kashmir Government.

\* \* \*  
Dr. C.R. Rao, Secretary and Director of the Indian Statistical Institute and a Fellow of the Royal Society has been elected President of the International Statistical Institute.

\* \* \*  
Dr. P.C. Gupta, former Vice-Chancellor at Visva-Bharati, has been appointed Vice-Chancellor of Rabindra Bharati University.

## Classified Advertisement

### MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE. Law College Road, Poona 4.

APPLICATIONS are invited for the following post:  
Reader in Chemistry Bio-chemistry/Organic Chemistry).

Pay Scale (Revised): Rs 1100-50-1600 Allowances as admissible.

#### Qualifications :

1. Doctorate Degree in the subject from Recognised University.
2. Research publications in Recognized Journals other than Doctorate Thesis.
3. Experience in Post-Graduate Research Guidance and Teaching.
4. Experience in Laboratory Organization.

Applications stating age, qualifications, experience, etc. should be sent to the Director, Maharashtra Association for the Cultivation of Science, Law College Road, Poona 4 on or before 26th November 1975. Employed candidates should send their applications through proper channel.

## CLASSIFIED ADVERTISEMENTS

**OFFICE OF THE M.P. UCHCHA SHIKSHA ANUDAN AYOG,**  
E-2/84, Arera Colony, Bhopal  
**ADVERTISEMENT**

APPLICATIONS are invited for appointment (likely to be made permanent) to the following posts, in the office of the

M.P. Uchcha Shiksha Anudan Ayog, Bhopal:

S.No.	No. of Post	Pay Scale
1. Development Officer	1	Rs. 680-40-800-50-1000-EB-50-1150
2. Education Officer	1	-do-
3. Senior Auditors	As may be required	Rs. 280-10-350-12½-400-EB-20-480
4. Junior Auditors	-do-	Rs. 205-5-240-6-270-EB-10-350-12½-375
5. Upper Division Clerks (Gr. II)	2	Rs. 205-5-240-6-270-EB-10-350-12½-375

2. The last date by which complete applications for various posts should reach this office is 15th November, 1975.

3. None need apply who is above 40 years of age on 15-11-1975 and is not a graduate of a recognised university.

4. Intending candidates for the above

**INDIAN INSTITUTE OF TECHNOLOGY**  
Bombay P.O. I.I.T. Powai,  
Bombay-76

Advertisement No. 819/1475

APPLICATIONS in the prescribed form obtainable from the Registrar, Indian Institute of Technology, P.O. I.I.T., Powai, Bombay-76, on request, accompanied by a self-addressed envelope (25 cm X 10 cm), for the post of REGISTRAR are invited before 30-11-1975. Candidates employed in Government, semi-government organizations or educational institutions must apply through proper channel.

Scale of pay, Rs. 1500-60-1800, plus other allowances, as admissible under the Institute rules.

Appointment will be on contract basis initially for a period of 5 years (A) Job Description :

Secretary to Board of Governors and the Senate. Overall responsibility of the office related to the administration of the Institute, including recruitment, personnel matter, promotion and discipline of staff.

(B) Qualifications :

Essential : A degree in Arts, Science, Commerce, Engineering or Technology of a recognised University.

Desirable : Post-graduate degree or diploma in Public Administration or Management of a recognised Institution/University.

(C) Experience :

Considerable administrative experience in a responsible position, preferably in a Government, Educational or research Institute or in a commercial organization of national standing. Adequate grasp of financial matters, secretarial experience of statutory bodies and committees, familiarity with academic activities and working procedure in higher educational institutions. Experience of a corporate life within a

posts should ask for prescribed conditions, educational qualifications and job requirements, etc. by making a reference to this office by sending a self-addressed envelope duly stamped

Sd/- (S. J. Naidu)  
**SECRETARY**

residential educational campus. Capacity to work harmoniously with students faculty as well as other supporting staff.

Teaching and research experience would be considered an additional qualification.

In the case of a candidate with exceptional qualifications, the duration of experience can be relaxed.

### **GAUHATI UNIVERSITY** **GAUHATI-781014**

Advertisement No. 12 of 1975  
APPLICATIONS are invited for the following posts :

1. Professor of Bengali : Permanent. one post
2. Professor of Political Science, Permanent. one post
3. Professor of Economics -do-
4. Professor of Philosophy -do-
5. Professor of History -do-
6. Professor of Education -do-
7. Professor of Botany -do-
8. Professor of Law -do-
9. Professor of Library Science -do-
10. Reader of Law -do-
11. Reader in Library Science -do-
12. Reader in Hindi -do-

Scale of pay : Professor :  
Rs. 1100-50-1300-60-1600/-  
Reader : Rs. 700-50-1250/-

The pay scales are subject to revision.

All posts carry usual allowances admissible under the University rules in force from time to time and the incumbents will be eligible to pension, G.P.F. and Gratuity or Contributory Provident Fund as per relevant statutes of the University.

Essential qualification :

**FOR PROFESSOR** : (1) Candidates must be recognized scholars in their respective subjects with Doctor's degree or equivalent published work. (2) Continuous research work of merit as evidenced by published papers in standard journals or published work of merit.

(3) 10 (ten) years' post-graduate or 15 (fifteen) years Honours teaching experience (4) Experience in guiding and promoting research.

In case of candidates of exceptional abilities with outstanding research contributions, the requirement of teaching experience may be suitably relaxed.

**FOR READER** : (1) A Doctorate Degree or published work of an equivalent high Standard. (2) Consistently good academic record with First or High Second Class (B+) Master's degree in a relevant subject or equivalent degree of a foreign University, (3) Evidence of continuous research and (4) experience of 5 years' post-graduate teaching or 8 years' Honours teaching.

Applications on plain paper in quadruplicate in case of Professor and in duplicate in case of Reader giving full biodata including (1) Name full (in block letters), (2) Father's name (3) Date of birth by the Christian era, (4) Present address (in full) (5) Permanent residence and address (in full) (6) Present occupation if any and name of employer (7) Present salary drawn (if any) (8) Detailed academic career with subjects of studies (including Honours) in degree and post-graduate courses from Matriculation/Higher Secondary/High School Leaving Certificate Examination onwards (9) Field of specialisation (10) Details of teaching experience (11) details of research experience and contributions all supported by testimonials and copies/reprints of research publications together with an application fee of Rs. 5/- (five) by CROSSED INDIAN POSTAL ORDER drawn in favour of the Gauhati University payable at Gauhati-781014 post office should be sent in an inner sealed cover superscribed "Application for post of (name of the post applied for) Advertisement No. 12 of 1975" enclosed in an outer cover addressed to Shri K.C. Bhattacharya, M.A., Registrar, Gauhati 781014 to reach him not later than 25th November 1975.

Ad hoc Professors and ad hoc Readers in the Departments of this University are required to submit three copies of their bio-data for consideration.

The number of this advertisement and name of the post applied for must be referred to in the application. Those in employment should apply through proper channel or with a no objection certificate from their present employers.

Candidates may be required to appear at an interview if and when called for.

### **LUCKNOW UNIVERSITY**

Advertisement No./1975  
APPLICATIONS are invited for the following posts :—

- Professors in the Grade of Rs. 1500-40-1800-100-2000-125/2-2500 :
1. One Professor of Psychology
  2. Two Professors of Education
  3. One Professor of Ancient Indian History & Archaeology
  4. One Professor of Medieval & Modern Indian History
  5. One Professor of Public Administration

6. One Professor of Sociology
7. One Professor of Social Work
8. One Professor of Hindi
9. Two Professors of Zoology
10. One Professor of Applied Economics (Faculty of Commerce)

**Qualifications :**

**Essential :** Doctorate in the subject concerned and consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first or high Second (that is to say, with an aggregate of more than 54% marks) Master's degree in the subject concerned or equivalent degree of a Foreign University in such subject and experience of teaching post-graduate classes for not less than seven years and/or having conducted and successfully guided research work for seven years in a recognised institution and having published work of high standard in the subject concerned.

Candidates possessing essential degree qualifications in Economics will also be eligible for the post of Professor in Applied Economics.

**Preferential :** High academic distinctions.

**Readers in the Grade of Rs. 1200-50-1300 60-1900 :**

11. One Reader in Philosophy
12. One Reader in Psychology
13. Three Readers in Education
14. One Reader in Medieval & Modern Indian History
15. One Reader in Economics
16. One Reader in Arabic
17. One Reader in Persian
18. Two Readers in Persian
19. Six Readers in Chemistry
20. One Reader in Bio-Chemistry
21. Two Readers in Geology
22. One Reader in Zoology
23. One Reader in Statistics

**Qualifications :**

**Essential :** Doctorate in the subject concerned and consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first class or high second class (that is to say, with an aggregate of more than 54% marks) Master's Degree in the subject concerned or

equivalent degree of foreign University in such subject, and experience of teaching honours/post graduate classes for not less than five years and published research work of high standard in the subject concerned.

For the post of one Reader in Geology, preference will be given to a candidate having contribution in any branch of Petroleum Geology.

**Preferential :** Experience of teaching post-graduate classes and guiding research.

**Lecturers in the grade of Rs. 700-40-1100-50-1600 :**

24. Two Lecturers in English
25. One Lecturer in German
26. One Lecturer in Chinese
27. One Lecturer in Russian
28. Two Lecturers in Philosophy
29. Three Lecturers in Education
30. Six Lecturers in Political Science
31. Two Lecturers in Public Administration
32. One Temporary Lecturer in Social Work
33. Two Lecturers in Urdu
34. One Lecturer in Persian
35. One Lecturer in Sanskrit
36. One Lecturer in Oriental Studies in Sanskrit
37. One Temporary Lecturer in Economics
38. One Lecturer in Military Science
39. One Lecturer in Psychology
40. One Lecturer in Medieval & Modern Indian History
41. Five permanent and one temporary Lecturer in Ancient Indian History & Archaeology
42. One permanent and two temporary Lecturers in Chemistry
43. Seven Lecturers in Botany
44. Two Lecturers in Zoology
45. One permanent and one temporary Lecturer in Geology
46. One Lecturer in Mathematics
47. Three permanent and one temporary Lecturer in Statistics
48. Two Lecturers in Business Administration (Faculty of Commerce).

**Qualifications :**

**Essential :** Doctorate in the subject of study concerned or a published work of a high standard in that subject, and

consistently good academic record (that is to say, the overall record of all assessments throughout the academic career of a candidate) with first or high second class (that is to say, with an aggregate of more than 54% marks) Master's degree in the subject concerned or equivalent degree of a foreign University in such subject.

**Preferential :** Experience of teaching degree/honours/post-graduate classes for two years.

**General :**

For purposes of qualifications required for the above posts the Degree obtained in a subject taught in a Department, which is subsequently constituted into separate Departments, shall be deemed to be Degree in the subject concerned for the newly constituted Departments.

Relaxation in the prescribed qualifications may be made in exceptional circumstances in accordance with the Statutes. Ability to teach under-graduate classes for all posts through the medium of Hindi essential except for the posts in Languages.

For the the posts of Lecturers suitable reservation will be made for Scheduled Castes and Scheduled Tribes candidates. Such candidates may indicate in their applications that they belong to Scheduled Castes/Scheduled Tribes attaching Certificates to that effect.

Benefits of Provident Fund available as admissible under the rules on confirmation for permanent posts. Period of probation for permanent posts is one year. It is not necessary to fill all/any of the advertised posts.

Applications on the prescribed form (available on request accompanied with a self-addressed envelope of size 23 cm. x 10 cm, free of cost from the Office of the Registrar) with recent testimonials publications etc. should reach Registrar, Lucknow University by Monday, December 1, 1975. The candidates, who are in service, must send their applications through the proper channel, Application Forms to outstation candidates will be issued by post upto Monday, November 24, 1975.

(Continued from page 30)

8. Rai, Jai Narain. Sri Brajnandan Sahay, Braj Ballabh aur unka sahitya. Magadh University.

9. Sharma, Shyam Lata. Suretar Ashichaap kavy mein bimbayojan. Meerut University.

10. Sharma, Tara. Dwivedi yug ke apramukh kavyion ka smeechshatmak anusheelan. University of Saugar.

11. Shukla, Girja Shanker. Tulsi sahitya mein bhugolic shanon ka anusheelan. University of Saugar.

12. Trivedi, J. J. Hindi-Gujarati vyakaran. Ek tulnatmak adhyayan Gujarat University.

**Bengali**

1. Kundu, Asokkumar. Bankim upanyaser upadan bichar. University of Calcutta.

**Oriya**

1. Mohanty, Upendranath. Oriya ritijugara kavyadhare (Purvardha 1550-1700 AD.) Visva-Bharati.

**Marathi**

1. Khot, Shankunisa Sadashiv. Marathi naatkanteel svag-tancha sarvageen abhyas (Isvi San 1690 to 1970). Nagpur

**University.**

2. Lokhande, Bhaurao Bajirao. Marathi sant sahityavar Bodh dharmacha prabhav. Nagpur University.

**Telugu**

1. Punna Rao, Akurati. A critique on well known Telugu grammars written in Sanskrit. Andhra University

**Geography**

1. Kamlesh Kumar. The Garhwal Himalaya. A study in population geography. Meerut University.

**Histor**

1. Bhakari, Surinder Kumar. Warfare in North India between 600 A. D and 1200 A. D. University of Saugar.

2. Haque, M.A. Orissa under the Muslim rule. Utkal University.

3. Lumia, Krishan Chander. Malwa in 1857-59. Indore University

4. Shukla, Dinesh Chandra. Studies in the history of Rajasthan from the age of Janpadas to the rise of the Pratiharas. University of Jodhpur.

5. Umathe, Motiram Kothiram. Bhartiya rashtravadacha vaicharik va andholanatmak itihas (Isvi Samvat 1885 te 1920). Nagpur University.

# THESES OF THE MONTH

## A List of Doctoral Theses Accepted by Indian Universities

### PHYSICAL SCIENCES

#### Mathematics

1. Chakraborti, Swapan Kumar. Some two-dimensional problems in solid-mechanics using complex variable technique. University of Kalyani.
2. Datta, Dipak Kumar. Some results on A.C-W functions and related integrals. University of Kalyani.
3. Ghosh, Sribrishnu. Lattice-like systems. University of Calcutta.
4. Gupta, Vishnu. Generalised regular rings and semi-primary group rings. I.I.T. Delhi.
5. Kar, Ajit Kumar. Analytic Functions of one and several complex variables. University of Kalyani.
6. Kumbhat, R. K. Integral operations and their applications. University of Jodhpur.
7. Pramanik, Anil Krishna. Some initial-value problems on water waves. Visva-Bharati.
8. Ravindra, M. P. A nonlinear analysis of lower hybrid by many-body techniques. I.I.S. Bangalore.
9. Sethi, Panna Lal. Applications of integral operations in solutions of integral equations. University of Jodhpur.
10. Taneja, Inder Jeet. A study of generalized measures in information theory. University of Delhi.
11. Vyas, R. C. Generalised laplace transform in two variables. University of Jodhpur.
12. Wason, Hans Raj. Theoretical seismology. Kurukshetra University.
13. Yadav, Yamuna Prasad. Stability problems related to the restricted problem of three bodies. Bhagalpur University.

#### Physics

1. Arora, Narain Das. A study of metallic colloidal particles in alkali halide crystals. I.I.T. Delhi.
2. Awdhesh Kumar. Self focusing and demodulation of electromagnetic beams. I.I.T. Delhi.
3. Chandrasekhar, P. Critical point phenomena in binary liquid systems and magnetoelectric systems. I.I.S. Bangalore.
4. Dutta, Hriday Nath. A study of some aspects of ionospheric irregularities using radio transmissions from artificial earth satellites. Kurukshetra University.
5. Ghosh, Prajit. Some problems in the interactions of pseudoscalar mesons with nuclei. Visva-Bharati.
6. Gupta, Ram Gopal. Mossbauer studies in mixed ferrites of manganese and zinc. I.I.T., Delhi.
7. Krishna Kumar. Growth of ammonium halides, cadmium oxide and zinc oxide crystals from vapor phase and solution techniques. I.I.T., Delhi.
8. Mahapatra, Binay Kumar Das. Studies on radioactive nuclei. University of Calcutta.
9. Mallikarjuna Rao, Palakollu. Experimental studies on the shapes of beta spectra. Andhra University.
10. Neelakandan, Koodallur. Lattice dynamical studies of metals based on a new electron gas model. I.I.T., Delhi.
11. Pandya, Dinesh Kant. Structure and transport behaviour of oblique deposited amorphous germanium films. I.I.T., Delhi.
12. Pandya, N. M. Thermal expansion and Debye temperature of KI, RbI and CsI by X-ray diffraction. Gujarat University.
13. Sharma, D. P. Studies in X-ray astronomy. Gujarat University.
14. Sivaraman, M. R. Topside ionosphere at low latitude. Gujarat University.

15. Sood, Sudhir Kumar. Electroproduction, photo-absorption and electromagnetic mass differences in a model of higher hadron supermultiplet couplings. University of Delhi.

16. Vema Reddy, Romareddy. Studies on some non-unique first forbidden beta transitions. Andhra University.

#### Chemistry

1. Bhattacharyya, Subirnath. Studies on organic semiconductors. University of Calcutta.
2. Datta, Parthasarathi. Groundwater recharge studies in the Indo-Gangetic alluvium plains using tritium tracer. I.I.T., Kanpur.
3. Desai, G. M. Studies on proteins and amino acids in cereals and pulses of South Gujarat. Gujarat University.
4. Ghosh, Govind Vasudev. Physico-chemical studies of thallium (III) complexes with some organic ligands. Indore University.
5. Ghosh, Amit Kumar. Studies on the interactions of polyanions with cationic proteins. University of Kalyani.
6. Goel, Krishan Kumar. Polarographic (D.C. and A.C.) and chronopotentiometric behaviour of ethanolamine (Mono-, Di-- and Tri--) complexes of uranyl ion. I.I.S., Bangalore.
7. Gupta, Hari Om. Magnetic studies of some paramagnetic substances at different temperatures. University of Delhi.
8. Joshi, Digambar Manik. Physico-chemical studies of 7-substituted 8-hydroxyquinoline-S-sulphonic acid chelates of yttrium and some lanthanides. Nagpur University.
9. Joshi, S. V. Studies on osmotic membranes for reverse osmosis technique. Saurashtra University.
10. Kaji, S. H. Studies in urea derivatives and related heterocyclic compounds. Gujarat University.
11. Kakkar, Ravi Kant. Explosive nature of some transition metal dinitroanthranilates. Meerut University.
12. Maini, Narendra Nath. Excess thermodynamic functions and weak interactions in binary mixtures. Kurukshetra University.
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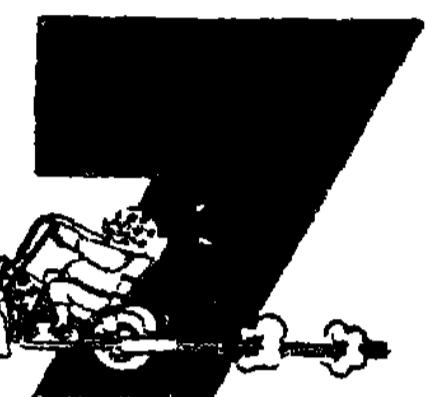
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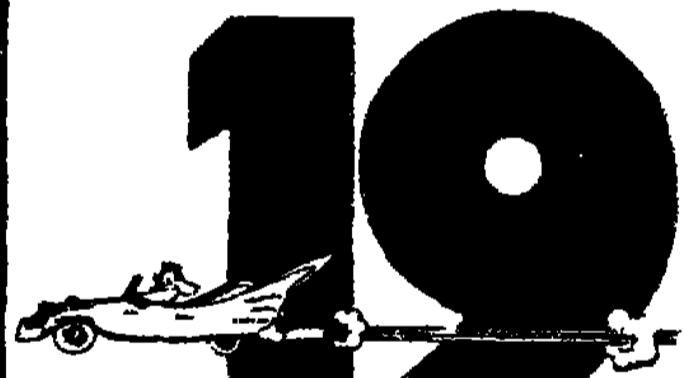
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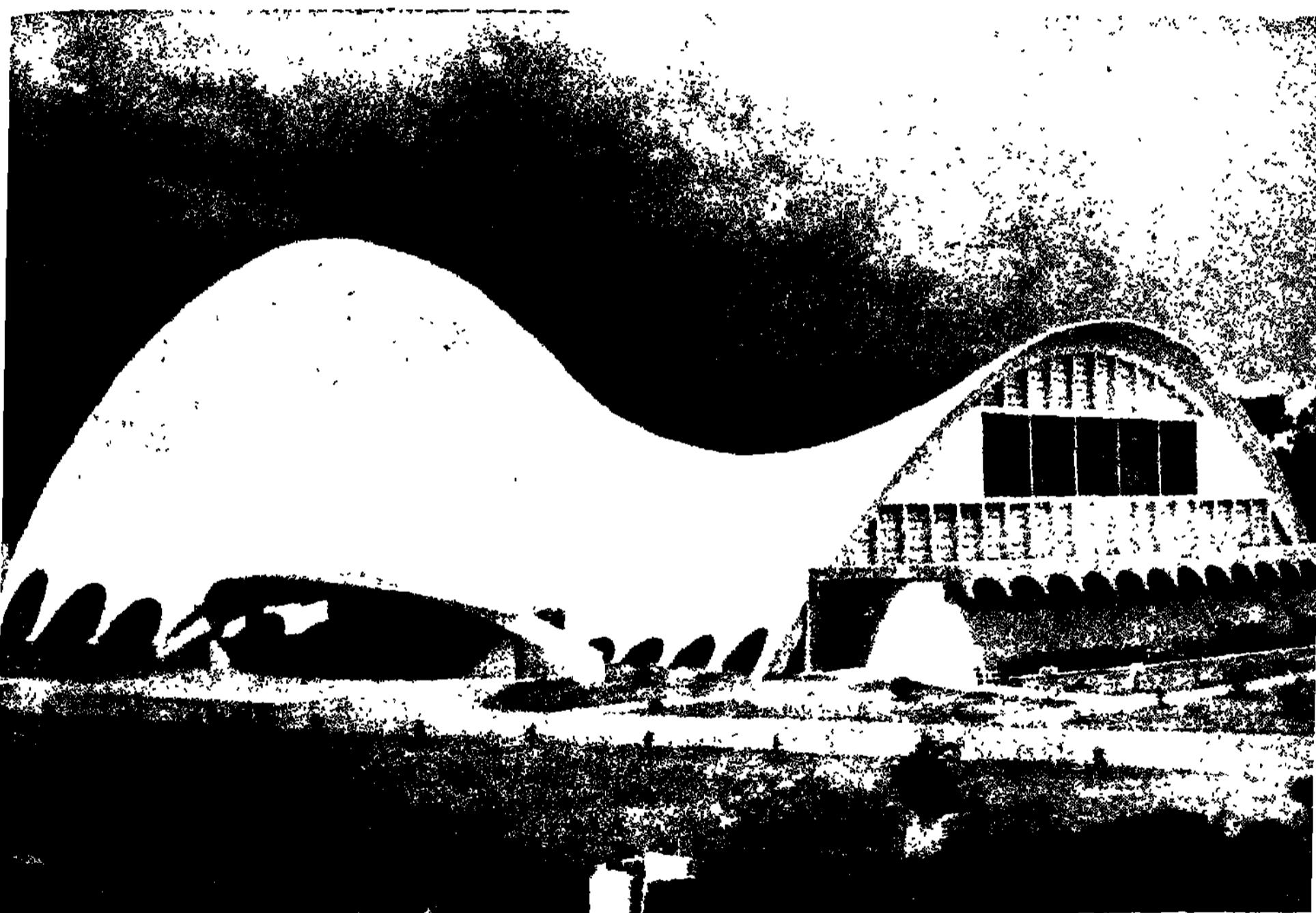
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*Editor : ANJNI KUMAR*

## CABE Meets in New Delhi

The 38th session of the Central Advisory Board of Education was held in New Delhi recently. The mobilisation of additional resources from the community through the levy of educational cesses was discussed at some length and it was considered essential to ensure the progress in the educational fields. The Board also considered it desirable and essential to transform the educational system comprehensively on the basis of the major concepts now being developed in most countries of the world. Some of the other recommendations are also reproduced below :

1. Concrete proposals for the comprehensive transformation of the educational system on the basis of broad concepts should be initiated. Practical steps for its implementation and for the development of large scale programme of experimentation and innovation at all stages of educational system be carried out.
2. The Board urged upon the Centre and the State Governments to make larger allocations to education during the remaining three years of Fifth Five Year Plan so that the possible damage to educational progress is reduced to the minimum.
3. Every effort should be made to mobilise educational resources from the community. The distinction between non-plan and plan expenditure for educational development be not made. The limited funds available should be utilised for the progress of education. In this context a re-appraisal of the existing educational programmes should be made and priorities should be identified.
4. The programmes of non-formal education should be developed on a large scale. Detailed plan based on necessary surveys should be prepared by each state for different age groups and sections of a society consistent with their local requirements and situation.
5. Non-formal education programmes should be co-related with the main developmental activities.
6. The existing students and non-students youth programmes like the National Service Scheme, Nehru Yuva Kendra, National Voluntary Scheme, National Integration Samiti and Planning Forum should be organised. Sports, games and physical culture should be broad based to cover a much larger number of young people particularly the non-student youth in rural areas. Indigenous sport should be encouraged and playgrounds should be shared by institutions. Students amenities should be given high priority. Hostel facilities should be provided for students coming from economically and socially weaker sections of community. Remedial tuition should be provided to these students. It was recommended to appoint a committee to review the programmes of youth services and student's welfare.
7. State Governments and other agencies were requested to take vigorous action for vocationalisation of education.
8. The University Grants Commission was requested to evolve special norms suited to the hill and tribal areas for its programmes of assistance to collegiate and university education in hill states.
9. The recommendations of the committee on status of women relating to education were endorsed. The Centre and State Governments should take necessary steps for their implementation.

# On 'Learning To Be': An Indian Comment

C. Lakshmana\*

The contemporary times are characterized by the desire on the part of the people to subject themselves to introspection in several walks of life; a desire which is stemming from their awareness of the inadequacies in the existing frameworks of action within which they function. This is a reflection on the society that it has been constantly moving away from ignorance to knowledge and from darkness to light. In spite of the appalling levels of illiteracy, ignorance, and impoverishment romping the world—more specifically in the third world—the quantum of knowledge and scientific progress has been phenomenal. The increasing desire to share the fruits of knowledge equitably—notwithstanding the distant hope of such realization of the equality in opportunities and fulfilment—and the tacit approval, though grudgingly, of such a desire for equitable and equal distribution of the fruits of progress among most men is the sine quanon of modernity and modern times. This rationale in the aspirational levels speaks volumes of the scientific temper, tending to be the *weltanarchaung* of the current society.

The desire for self introspection and critical appraisal is evident in several directions. Invariably such a critical appraisal and analysis of the social context has been giving rise to the appreciation of the need for transformation of the structure and functions of several sub-systems such as social structure, economic organization, political equations, educational system and so forth. While it is true that such a realization warrants honest efforts on the part of the entire social system for effecting changes to emerge into a just and equalitarian society, yet the sections in the society which have developed vested interests thwart the efforts for social transformation in innumerable ways. They tend to be the blocks in the path of social change. The issues are diverted and policies of change are undermined by discerning and, sometimes, deliberate articulation of activities. Confronted with such a situation, the forces of change pave the way in some cases for violent and abrupt revolutionary transformation of the social orders. In others, though conscious and concerted efforts, path of social transformation is well charted, with constant assessment of the gains and setbacks in the realisation of the altered goals and objectives.

An important feature of the modern technological democratic society is the process of fundamental democratization in the structuring of the social order.

\* The author is Professor & Head of the Department of Sociology, Osmania University.

At least, theoretically speaking, political decision making on the vital issues which impinges upon the socio-economic order is supposed to take into account the political will of the large base of the hitherto hierarchical society. Groups and segments of the social order which were hitherto outside the orbit of the political and social processes which laid down the modalities of social behaviour are drawn into the area of socio-political operations. It also meant redrafting of the social and political equations. The principles of social stratification have undergone fundamental change. All this was possible because a large number of the subject and colonial nations were liberated from the foreign rule. Such independent nations showed a keenness for progressive and radical social transformation. Exploitative nature of the social order was earnestly questioned. Inequalities in the social orders were sought to be removed and efforts to evolve a just and equalitarian social base became the major concern of such nations. Among others, the process witnessed 'pupil's explosion'. Against the background of changing values and enormous educational explosion, the standards of education were affected. Further, the mass base of education exposed the inadequacies of the education system to cope up with the demand and fulfilment. A sense of deep frustration and anguish prevails in the contemporary society. Under these circumstances, the UNESCO sought to help of the International Commission, appointed for this purpose, to devise ways and means to improve upon the educational process in the developing and developed countries.

The Commission which was headed by Mr. Edgar Faure attempted with commendable success an analysis and assessment of the present situation educational system in several countries. This 'historical diagnosis' led to 'deadends' as claimed by the Commission. The Commission cogently argued that the "traditional formulae and partial reforms cannot meet the unprecedented demand for education arising out of the new tasks and functions to be fulfilled". In this process to find out solutions to the problems, they have taken into account "recently developed intellectual procedures, conceptual approaches and technological advances" as necessary inputs into education, among other things, to achieve the goal and ultimate aim of education as stated by the chairman Mr. Edgar Faure "educating the complete man". The commission was in search of a practical policy which can lead to action. Thus this report is the end product of an effort which accounts both for the intellectual, theoretical implications in

the educational policies and programmes, and the concern to make the findings empirical and practical. The Commission recognised the limitations, though implicitly, in covering the entire gamut of education in varying cultural levels and socio-economic stages of development. This is obvious from the plea that national debates should flow from the formulations in the report so that specific strategies could be worked out for individual countries. The Commission has, no doubt, generated enormous interest at the national levels to deliberate over the assumptions, arguments and conclusions of the commission. Such a widespread debate is bound to clarify the issues and clear some of the misgivings. One of the major thrusts of the education Commission has to free the educational process from the elitist hold. Elitism inevitably resulted in favouring the academic success of children from the privileged social and cultural background. Thus elitism depends upon a certain basic principle of selection which worked to the advantage of the privileged sections only. It is sometimes mistaken that the growth in quantitative numbers is automatic liberation from elitism. This is far from true. This aspect has been rightly stressed by the commission. Further Commission recognized the difficulties in evolving non-elitist educational frame. It goes on to state that "a vital task for our time is to seek fundamental, non discriminatory models. On all sides, the search will run into political and financial obstacles, psychological resistance and above all, the rigid stratification of society". The Commissions concern about the restrictionist role of the alienated bureaucratic system in developing elitist tree educational process is understandable in view of the experience in the developing societies. In this respect Commission deserves our appreciation, and efforts have to be sincerely made to avoid stumbling over the pit falls pointed out by the report.

The findings and conclusions of the Commission would be broadly subsumed under six major thrusts. The first and foremost among them has been their emphasis on 'life long' education. It is their contention that education does not cease with exit from a formal educational institution, and that the individual should continue to learn even thereafter. The burden of their appraisal and solution for educational ills has been the shaping of a learning society. This had been earlier also recognised as continuing education and so forth. In his preamble, Mr. Edgar Faure in fact goes all out to state that "if learning involves all of one's life, in the sense of both time span and diversity, and all of society, including its social and economic as well as its educational resources, then we must go even further than the necessary over-haul of 'educational systems' until we reach the stage of a learning society". Thus the Commission pleads for the emergence of a learning society as the ultimate social goal of education and as the means for the realisation of true education itself.

Their second major focus stems from the above proposition. Life long education can not be a reality

through structured educational process. Life long education can not be realised by formalizing the educational process. This has further to be viewed against the background of broad basing of education. If education has to reach all levels of a mass society, it can not be achieved only through structured classroom instruction. We may also have to view this process in the background of high stagnation and wastage in educational system. Many of the developing societies have been witnessing high drop out rate among the school going children, especially among the children belonging to the weaker and depressed sections of the society. This damage could be remedied to some extent by opening up possibilities for re-entry into the educational process. Thus there is a need for multiple entry into the educational system. The foregoing argument amply strengthens the conclusion of the International Commission that 'unsystem' is the solution for the problems of educational spread in the third world. There are one or two difficulties in such an implementation to whose discussion we will revert a little later.

The Commission laid great stress upon pre-school education. This might have been prompted by the dictum 'catch them young'. The commission recognized the importance of early childhood in the development of later adult personality. Thus the importance of shaping the mind of individual at such a formative stage was greatly stressed by the Commission. The Commission was also alive to the fact that it involves heavy investment as also very great vigilance on the part of the administration. In this connection, the Commission cites and commends the experience of Peoples Republic of China and Union of Soviet Socialist Republics in organizing the kindergartens and creches.

If the education has to be, according to the Commission, meaningful, it has to undergo considerable changes in the traditional structure of the education system. The Commission argues in favour of vocational and basis education. They felt it necessary to encourage this type of education in view of the inability of a large section of children to receive formal full time instruction in view of the social and economic constraints. The implications of such a system of education in a closed social system which is still in operation in India will be analysed later. In order to make these bold suggestions workable, the Commission stressed the need for full utilization of the new technologies. They envisaged a tremendous role for the mass media like television, radio and so forth. There are no two opinions, in one view, about the great role these media can play in revolutionizing the educational process. But such a policy may have some human implications in some of the developing societies. Finally among other things, the Commission recommended that "rigid distinction between different types of teaching, general, scientific, technical and professional—must be dropped, and education, as from primary and secondary levels, must become theoreti-

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# Convocations

## National People's University Proposed

Professor Nurul Hasan, Union Minister of Education and Social Welfare while delivering the twenty-sixth convocation of Karnatak University at Dharwar, underlined the necessity of adopting a new strategy to achieve an all round educational growth combined with the maintenance of standards of higher education. He pleaded for social justice and full opportunities for the weaker sections of the community.

These seemingly contradictory ends have been combined to meet the needs of the country in the latest decision of the Central Advisory Board of Education and the University Grants Commission. The new strategy of the government was enunciated by Prof Hasan:

- (i) The pattern of 10--2--3 should be adopted all over the country as soon as possible. This would transfer, to school stage, the large enrolment at the intermediate level and will help to vocationalise higher secondary education, to improve standards both at school and in the university, and at to cut down recurring costs
- (ii) The facilities for full time institutional instructions should be carefully planned and regulated. The State should assume greater initiative in this task and private enterprise should be subjected to greater control. New institutions should be opened only in under provided and backward regions. The full time institutions should become academically viable by reaching
- (iii) an optimum size. There should be an adequate provision of hostels and a very large programme of scholarships to ensure that no talented young person is denied access to full-time instruction merely on grounds of poverty. Admissions to all institutions will have to be selective. Yet care should be taken to avoid elitism. The test of merit should be culture-free. For this purpose new and appropriate selection tests which will combine considerations of merit with those of social justice will have to be designed. Proportional reservations will have to be made in all full time institutions of higher education for scheduled castes and scheduled tribes, girls, children from rural areas and for weaker sections of community as well as for the first generation learners. There will have to be adequate provision for remedial courses in all these institutions to ensure that these students catch up with the general level as soon as possible.
- (iv) Special programmes will have to be developed at the school stage for ensuring social justice. The elementary education will have to be made universal and the talented children have to be spotted out at an early age and means should be found for their further studies. In this context the Central Advisory

Board of Education had put forward a scheme of model primary schools and model comprehensive secondary schools. These are expected to provide education of good quality, help the schools in their neighbourhood to improve standards, and admit not less than 25% of their students from the weaker sections of the community.

- (v) For those who will not be able to get admissions in full time institutions of higher education, wide opportunities should be provided for non-formal and self-study programme. All Board and University examinations should be open to private candidates. There should be a liberal provision of correspondence courses and at least one university should provide them in every region and in every major Indian language.

Prof Nurul Hasan said that the government also have under their consideration a proposal to establish a National people's university functioning on the broad pattern of the Open University in United Kingdom. It will help all workers and all those who could get admissions to full time institutions, if they so desire to get a degree. It will be able to delink higher learning from degrees and make it possible for every young and adult in any part of the country to improve his knowledge and skills on the lines of his choice.

The Minister said that this new policy in higher education will be able to maintain standards and give the weaker sections of the society greater access to higher education. It will also achieve regulated expansion and ensure a measure of equality of educational opportunity never attained in the past.

# Panjab Confers LLD on Ramphal

The Panjab University held a special convocation for conferring the degree of Doctor of Laws (*honoris causa*) on Mr Shridath Surendranatha Ramphal, Secretary-General of the Commonwealth recently Shri B. D. Jatti, Vice-President of India and Chancellor of the University presided.

Prof. R. C. Paul, Vice-Chancellor, in his citation said



Shri B. D. Jatti, Vice-President of India conferring the LLD degree on  
Mr. Shridath Surendranatha Ramphal

that Mr. Ramphal is one of the most distinguished leaders of the Caribbean region. He has played a prominent role in the non-alignment movement. His wide and varied experience in legal work particularly in the constitutional developments and his leader of delegations to the General Assembly of the United Nations and International Conferences, will be a valuable asset to the Secretariat of the Commonwealth. Prof. Paul hoped that his visit to this country would help to create another bridge of understanding

Tagore. He said that Pt. Jawahar Lal Nehru, more than any other statesman of his time, was sensitive to the realities of an interdependent world and always spoke of seeking out areas of agreement and enlarging them. He also referred to his efforts for preserving the Commonwealth with added dignity and purpose as an association of free and equal nations dedicated to the welfare of all its members.

He said that India is more than a country; it is an idea. Its greatest and most lasting victories

have been those of the mind, not of the sword. Its culture radiated out to far off lands because it believed, as it still believes, that certain values are more important than mere power. For thirty centuries India has proclaimed the ideal of tolerance, the philosophy that truth has many facets, and has shown that common endeavour can thrive in diversity. Nowhere else has the power of assimilation, the art of synthesis, the ability to reconcile the universal with the local, been more triumphantly demonstrated.

It is on these very premises, these very values, that the modern Commonwealth rests. The Commonwealth, too, is an idea. Its multiple diversity, its capacity to see problems differently interpreted and approached with different attitudes of mind, its ability to contain these and survive them, its constant striving for new frontiers of understanding and cooperation, are contemporary and global variations on historic Indian themes. Just as India has been enriched by different streams of thoughts and culture which have flowed in from different directions, many different streams in the Commonwealth might also help humanity slowly advance to a higher consciousness as well as confer immediate practical benefits?

Liberty was the dominant passion of the first half of this century. That passion ushered in a political revolution, the greatest in history, resulting in the emancipation of more than a billion people. And as the political revolution spent itself, an ancient but perennial moral problem rose to the surface and world politics was engulfed by a new urge, a new passion a craving for equality, specifically economic equality, a demand for an end to the hierarchical position of the rich nations and the creation of a new international economic order. A global strategy of development organically linked to a programme of international cooperation, will not emerge full blown from any one forum.

## KASHMIR VARSITY'S FIRST CONVOCATION

The first convocation of University of Kashmir was held recently. His Excellency, Nawab Ali Yavar Jung, Governor of Maharashtra, was the chief guest. In his convocation address he highlighted the functions and privileges of the Chancellor of the universities. He said that in most of the Indian universities, the Governor happens to be, by virtue of office, so the Chancellor, through the two functions and even their authority and powers are different. For one thing, the Chancellor is essentially an officer of the university. The Governor enjoys immunity from suit but as a Chancellor he does not have this privilege. The Governor is not obliged to disclose the advice he received from his Council of Ministers; no such obligation binds the Chancellor if he ever does receive such advice. Bearing these considerations in mind and the essentially autonomous nature of the university, the Chancellor has been vested with duties and powers of supervision, in some respects even of control. The Chancellor in Maharashtra symbolises the autonomy of his universities, specially the six non-professional universities and it is to the credit of the State Government that, even otherwise, the autonomy of the institutions is respected and observed. As financial grants come mainly from the State and problems of law and order and security affect the State vitally, there exists a continuous process of consultation between the Government and the Chancellor, and Universities and their affairs constitute a good part of these Consultations.

The autonomy of universities has become a by-word, but should not, for that reason, be either taken for granted or lightly treated, far less either abused or ignored. Its main exercise and expression are in the academic field concerning teaching and learning, the courses of study, the qualifications and selection of teachers and the standards of

admission of students, their representation on university bodies, the functions and powers of those bodies and the right of the university to legislate in respect of all or any of these matters. The management of the university is there to regulate the facilities to be provided to the teachers and students. It owes a duty to the community and the State that standards are maintained, that order is preserved, that the finances are spent on the objects for which they are given, that the university does not get into debts or deficits and that the conduct of its officers, teachers and students remains above suspicion. The system adopted by it for teaching and examinations must impart quality to the one and correct assessment to the other, without lending themselves to the possibility of misdemeanour or malpractice. Public faith in our universities would vanish, if the autonomy does not ensure the above results. It is accountable in that sense and constitutes a two-way traffic : we conduct ourselves with purpose and rectitude and there can or should be no intervention : we do not and we then invite it. It is obvious that the State cannot remain an ideal spectator of disorder or maladministration, and then the Chancellor would be expected to institute the necessary enquiries and investigations. Depending upon their results, he might have to turn to his alter ego, the Governor, for remedial measures. Which is Dr. Jekyll and which Mr. Hyde depends upon how one looks at either and the appearance presented by the university itself.

He said that he would prefer this system to that of the Visitor in the central universities. He disliked visitations of any kind as the process of correction should remain within the university itself, in its officers, teachers and even its students.

The Prime Minister in her recent address to the Vice-Chancellors had mentioned amongst various other things, certain patterns of behaviour on the part of some sections of the

student community. She had said that the university is not a sanctuary where disorder can prevail with impunity. In Maharashtra, instructions have been issued that lawlessness of any kind, which is created frequently by elements from outside interested in disruption, who have little concern for the students as such, should be severely curbed. At the same time, the universities have been instructed to deal speedily and sympathetically with the legitimate grievances of the students in so far as they concern their welfare and the facilities provided for their studies. In these days of abolition of all privileges the students themselves would not like to be treated as a class above the law and different from all other citizens. In fact as a part of our educated community, they should rebel against any such idea or expectations. If the students are not a privileged class nor surely are the teachers themselves, the teachers have to play a role both inside and outside the classrooms and the maintenance of order in others implies its observance by one self.

Within the autonomy of the university, as defined above, with its freedom and limitations it is also the business of the university to think and plan for itself and to be allowed every latitude to do so. It must plan and evaluate programmes for improvement and further development programmes from the point of view of new knowledge and the national needs, review their progress from time to time, evolve new methods of teaching and examination, and for all these purposes effect consultation and exchange of information with representative organisations of agriculture, commerce and industry, the social service organisations, the scientific and technological professions and with other universities and research institutions in India and abroad. An inbuilt machinery of evaluation, planning and review exists in our legislation as also for the kind of consultations and exchange of information and ideas. Without it, a university

world work behind curtains of exclusion & seclusion and is a world either of unreality or obsolescence. A developing country like ours particularly, in the world of today, has no room for disoriented or outdated men and women and no university can be an instrument of change unless it is prepared to change itself. In fact it has to be the home and repository of fresh thought and new orientation, the follower but also the discoverer of new knowledge. In every university of ours, there are both teachers and students who given the opportunity, the facilities and the freedom can bring to it this kind of meaning and purpose which is needed.

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cal, technological, practical and manual as the same time". It is a far reaching suggestion in that it pleads for doing away over specialization which the present days system of education is preaching and this suggestion deserves widest debate and deliberation because of its immense possibilities of growth and development.

While we are appreciative of the concern and imagination of the Commission in evolving a new dynamic educational strategy, we have some reservations about some of the considerations of the Commission. In the first instance the Commission suffered in two senses - in its composition and in its coverage. The membership of the Commission was conspicuous for its absence of the representatives of free Asia. Secondly the Commission omitted to visit some important nations such as India which are facing the educational problems from the particular stand point which need active consideration in evolving a sound educational policy. Because of this imbalance in composition and coverage, some difficulties arise. For instance, the Commission seems to have missed the man-power dimension. Some of the Asian countries have abundance in man-power. Even if we restrict the population growth yet these nations will have immense possibilities through man-power abundance. This abundance of man-power could be utilised to strengthen the educational system at comparatively low cost. It could have relieved the pressure on employment, and at the same the effective realization of educational goals through larger teacher participation could have been achieved. Viewed in this light, mass media will have secondary role in these nations. These media could be so developed as to strengthen the man-power articulation in educational process.

Another serious omission of the Commission has been the understatement of the role of existing socio-economic structure in some of the developing societies. The vested interests which represent

A most needed and welcome change proposed to be instituted is the division of different stages of education into 10, 2 and 3 years, which is likely to reduce the drop-outs at each stage who constitute such a substantial waste today. If each stage could provide both terminal courses and courses which would lend option up the ladder, it would provide the option either of leaving off in search of living, for which the nature and content of the course should be suited, or for scaling up the ladder for higher education and, where desired and where both interest and competence exist, for research.

The university has instituted a number of medals and prizes this year. Dr. Zakir Hussain Gold Medal was awarded to the best graduate of the year. Gold medals were also awarded in the Arts, Science, and Commerce faculties. The Gani Kashmiri Gold Medal instituted by Indo-Iranian Society was awarded to the best student in Persian. Shrimati Yasho Karan Singh cash prize of Rs. 250/- was awarded to the best woman graduate of the year and Sir Hugh Springer (Secretary General of the ACU) cash prize of Rs. 100/- was awarded to the best student in Political Science.

substantially powerful sections in the society thwart any programmes which aim at spreading the principles of equality and social justice. Thus advocacy of informal education may result in unequal development of the educational opportunities due to the mechanics of these vested and landed interests. In view of this, we are of the opinion that structured education may be necessary at least to reach the lowly sections in the social order and cover them in the educational movement and momentum. This, of course, has to be coupled with radical transformation in the social order. Over and above such basic structure, a super structure of informal education with the help of mass media could be developed to enlarge the scope and possibilities of educational benefits for the adult population. Adult and functional literacy could take advantage of the informal educational machinery. Likewise, vocational and basic education, of its implications are not fully realised, may only cement and strengthen the stratified social order in some of the nations. This is very significant for caste-ridden Indian Society. Success of vocational education must be preceded by massive effort to transform the rigours of the stratified social order and the hierarchy of vocations which is an integral principle of the caste society.

Thus some of the pit-falls need careful consideration before the recommendations of the Commission are translated into action systems. Somehow Commission was more or less silent on the problem of student unrest and its far reaching implications and consequences in sound educational policy. This aspect deserves greater consideration. Lest any good effort at redrafting of the educational system may flounder on the rock of resistance in the form of student protest. Further debate should be initiated on this important issue. On the whole, the report of the International Education Commission is thought provoking. It deserves the attention of the educationists and the planners in all the developing societies.

# Book Review

A guide to reference materials on India 2V.

by Gidwani, N. N. and Navalni, K.  
*Cons and Eds.*

Saraswati Publications, Jaipur, 1974,  
X, 1536 p.

Mr. N. N. Gidwani, Director, Rajasthan University Library and his associate Miss Navalni were undoubtedly placed in an invidious position by setting before themselves the task of comprehending all the reference material, books as well as analytics in composite books and periodical publications, about India "issued anywhere in the world in any language and at any time since the invention of printing". The Statement may appear to be audacious at times, but it is a measure of their achievement that they have nearly succeeded in their task. The lacuna in the reference work are several especially the typographical errors being too many, but those are pardonable because the task undertaken by the editors should have devolved upon an institution and not individuals otherwise engaged in their respective jobs.

The arduous job that took several years to complete consists of 20,000 entries, with the number of separate entries exceeding 50,000. Attempts have been made to provide annotations whenever possible. In several instances, reference has been given to reviews published in newspapers and periodical publications.

What however distinguishes the publication is not its thoroughness but its comprehensiveness. There are, for instance, 12 pages of listing of encyclopaedias published in various languages of India including English. The oldest encyclopaedia on India in English was published during the Mutiny. There are 6 encyclopaedias in Kannada published so far. The reference work is a gold mine of information. You

name it and it is to be found there. The chapter on Censuses to give another instance, has 87 pages of listings.

The work of reference has been loosely defined to cover a variety of fields including bibliographies, dictionaries, yearbooks, statistics, gazetteers and state of art studies. The classification of entries by conventional subjects like social sciences, humanities and sciences spread over 1283 pages. The arrangement of entries is thus broadly in a conventional scheme of library classification. The subject and author under is spread over 252 solid pages.

It is commendable on the part of the authors to at least have taken into account reference works to be found in Indian and other European languages besides English. It is however obvious from the thinness of entries in languages other than English that there has been heavy dependence upon secondary information about them.

By all standards, it has been a stupendous achievement on the part of editors, marred as we have stated before, by numerous typographical errors. It is a definitive work which can be the basis of detailed studies by other enterprising bibliographers. The present work at the same times needs improvement and constant updating. It is high time that an institute of bibliography is established in India to carry on further work on a comprehensive bibliography of India.

It is hoped that the next edition of the present work will be more carefully prepared by perhaps eliminating all such references as are based on secondary sources. Bibliographies which are obviously below standard need not be listed. More and comprehensive annotations should be prepared. Particular care needs to be taken in adopting

well recognized schemes of transliteration. These are suggestions which it is hoped the editors will not find difficult to accept.

GIRJA KUMAR

## Announcement

Dr. D.M. Myers, Vice-Chancellor of La Trobe University, Melbourne, Australia would be retiring in December, 1976. The Council would be glad to receive suggestions and enquiries by the end of April 1976 from persons interested in the appointment or who wish to suggest suitably qualified persons for the post. Letters in confidence should be addressed to the Hon. Mr. Justice Smithers, the Chancellor at the university. In addition to his role as chief executive officer, the Vice-Chancellor is encouraged to maintain an active interest in the scholarship and academic pursuits of the University, especially through the development of personal relationship with the staff and students.

La Trobe University was established in 1967 and has seven Schools (Agriculture, Behavioural Sciences, Biological Sciences, Education, Humanities, Physical Sciences and Social Sciences) with an enrolment in 1975 of 7700 undergraduate and post-graduate students and a total staff of 1950 including 450 full-time academics. Capital expenditure to date totals approximately \$A 43 million and annual recurrent income is at present in the order of \$A20 million. The university is approaching its planned ultimate enrolment of some 10,000 undergraduates and a substantial number of post-graduates. The university occupies a 196 hectare site 15 kilo-metres from the centre of the city of Melbourne.

## Readers write...

### New educational pattern

Sir.—The Union Education Minister, Prof. Nurul Hasan, addressing the recent conference of educationists in Delhi (they had gathered to discuss the 10+2+3 pattern) advocated the idea of a two-level syllabus at the secondary level. The educationists did not find the idea worth accepting and they instead preferred a common curriculum. It seems Prof. Hasan's new idea did not receive the attention that it deserved.

No doubt the new ten-year curriculum proposed by the National Council of Educational Research and Training has been welcomed because work experience finds a place in it and because "the pass or fail" concept of examinations has been replaced by a process of grading through internal evaluation. But the change will have to be gradual if it is not to result in chaos and make the existing confusion in education worse confounded.

Prof. Nurul Hasan's idea of a two-level syllabus is really worth reconsideration in a new context. As it stands now all Higher Secondary Schools have been put under one category in spite of the fact that most Higher Secondary Schools which have very meagre scope for providing facilities to their students because they are situated in awfully congested city areas (some of them just on the roadside and some of them in very small compounds) without any possibility of expansion. It would be highly advisable therefore first of all to classify schools into two categories A and B on the basis of the scope for providing facilities to students. Obviously then, Prof. Nurul Hasan's idea of a two-level syllabus has to be accepted if injustice is not to be done to the principals, teachers and students of B category schools while comparing the achievements of schools.

To give an example in the new syllabus in the 10+2+3 pattern, physical education and health education are given the greatest importance without taking into consideration the fact whether the 'B' category schools will be able to do justice to the elaborate syllabus prescribed. These schools don't have playgrounds (and the government cannot possibly allot them any playground nearby) and yet they are being told that games like hockey, foot-ball, cricket and athletics should be organised somehow or other. Let us face facts and not live in a fool's paradise. 'B' category schools should be given a syllabus in physical education and health education and in other subjects which it will be possible for such schools to work out.

It is not commonsense to organise inter-school tournaments between the students of 'A' Category schools and 'B' category schools in one pool. When there is no equality of opportunity how can the students of 'B' category schools be compulsorily made to compete with the students of 'A' category schools which have all kinds of facilities including extensive playgrounds, swimming pools, one shift schooling. Inter-school competitions and tournaments should be organised for schools of 'A' category and "B" category separately if justice is to be done.

As for the concept of internal evaluation, it is advisable to be cautious in introducing it. The experience of the Principals of the Higher Secondary Schools of Delhi has been that due to the evil of private tuition indulged in by teachers, internal assessment can never be a genuine assessment. It will depend upon the whims and fancies of the teacher concerned and these whims and fancies reflect the tuition money that the teacher is able to get from a particular student. An impartial examination or evaluation or assessment system has to be evolved. Instead of that if the whole eval-

uation work is given to teachers of the institutions concerned it will result in favouritism and make the system basically unjust leading to greater confusion than is existing at present in schools and colleges.

S.G. MAMPILLI  
New Delhi.

### Research facilities

Sir—It is a matter of pleasure that the UGC has placed emphasis on research work while granting the new scales. According to the UGC, a lecturer getting appointment in the new scale of Rs. 700—1300—1600 has to complete his Ph.D. within five years of appointment, failing which further increments in the scale will be stopped. Even old lecturers in the colleges will have to pass through assessment at the basic salary of Rs. 1300 in the new grade.

While appreciating the UGC's emphasis on research, I request the UGC to grant certain facilities for research work. Teachers serving in affiliated colleges are at a disadvantage so far as research work is concerned. There is no library of research standard nor are there proper guides. Teachers of such colleges desirous of doing research work should be granted at least two or three years' leave with pay to go to some research institute and complete their research. The M.L. Regional Engineering College of Allahabad has a scheme called Quality Improvement Programme under which teachers are granted at least three years' leave on full pay with an annual contingency allowance of Rs. 1000 to join some research institute. UP with half a dozen affiliating universities that have implemented the new UGC scales should provide this facility to teachers of affiliated colleges.

MADHUSUDAN MISRA  
Rai Bareli.

# Round Up

## National Board set up for awarding medical degrees

The National Board of Examinations has been set up by the Government of India to maintain the highest standards of medical education and training and to award postgraduate degrees to medical graduates. The Board owes its origin to the recommendations of a working group appointed earlier for this purpose. The medical graduates in the country would be eligible to take this examination after adequate training in a properly recognised institution in all disciplines. The examinations will be held in all State capitals and would be conducted by the Indian Academy of Medical Sciences on behalf of the National Board of Examinations. This is a step taken by the Union Government towards reversing the brain drain. The setting up of this Board will obviate the need for Indian doctors going abroad in search of prestigious qualifications.

The President of Indian Academy of Medical Sciences will also be the President of the National Board. There will be four Vice-Presidents representing the basic medical sciences, medicine and allied sciences, surgery and allied sciences and community medicine and health administration. The Director-General of Health Services, the Director-General of Armed Forces Medical Services, President of Medical Council of India, the Director-General of the Indian Council of Medical Research, President of the Indian Medical Association and the Chairman of the University Grants Commission will also be the members of the Board. Dr. K.N. Rao, former Director-General of Health Services, will be the Member-Secretary. The various disciplines in which the examinations would be conducted are :

anatomy, physiology, pharmacology, bio-chemistry, pathology, microbiology, forensic medicine, pediatrics, dermatology and venereology, psychiatry, radiology, chest diseases, cardiology, neurology, gastroenterology, nephrology, endocrinology and metabolic diseases, surgery, orthopaedic surgery, ophthalmology, anaesthesiology, obstetrics and gynaecology, neurosurgery, plastic surgery, paediatric surgery, genito-urinary surgery, cardio-thoracic surgery and community medicine and health administration.

Dr. Karan Singh, Union Minister of Health, while inaugurating the Board said that the pattern of education in the country needed radical changes to suit the growing needs of the country. The standards of post-graduate examinations should be improved to prevent an undignified rush for British and other foreign degrees by young Indian graduates. The decision to establish the Board would in this context enhance the national prestige and self-respect. Dr. Singh also drew the attention of the Board to the need for perspective planning in regard to manpower development in the field of medicine in relation to the country's growing needs so that adequate number of doctors and specialists could be trained and made available for different jobs.

## Semester system for Madras College

Dr. Malcolm S. Adisesiah informed the teachers in Madras that after the implementation of 10+2+3 system, no one of the existing teaching staff need fear of unemployment. Under the new semester pattern for different branches of university education, the number of teachers at present would almost be doubled.

The semester system would

be introduced at the postgraduate level from the next academic year. It would be gradually introduced at the undergraduate level after providing adequate number of teachers. The university would also be introducing the central evaluation system for the next PUC examination. An attempt will be made to computerise the whole system of grading from the very beginning. The marking system is also expected to be computerised from the next September examinations.

Dr. Adisesiah said the open university had come to stay in the south though he was not sure whether the University of Madras could go to the same length as Mysore and Andhra have gone. There was a need to relate teaching and research and for this a new formulation of this double function of teaching and research had to be initiated by the Syndicate. He supported the formation of the University of Science and Technology which was expected to be set up by the next academic session.

Dr. Adisesiah was much concerned with the question of raising standards of education. He said that there was a need to reconcile raising standards as between universities in this State, and the universities in the southern region and the need for diversity in each one of the specific units. Work was proceeding along two lines. The possibility of coordinating the Board of Studies in certain selected areas, where levels of excellence could be raised, was also discussed with the other Vice-Chancellors in the recent meeting held at Madras. Another aspect was to frame alternative syllabi for the same discipline, taking into account not only the local situation but also the difference in manpower and sophisticated equipment available in teaching units.

## Scheme for Ecological Regeneration

Dr. M.S. Swaminathan, Director-General of the Indian Council of Agricultural Research has made an appeal to the agricul-

total universities to implement the plan of action drawn up on the basis of suggestion of the Prime Minister made at the meeting of the Vice-Chancellors of agricultural universities. He has pleaded to fight the 'unholy triple alliance of pests, pathogens and weeds'. The new scheme envisages management rather than control of pests to maintain ecological balance as it is felt that indiscriminate application of chemical pesticides and total eradication of pests like rodents may have unfavourable repercussion at a late stage. In regard to weeds, there is no fear of upsetting ecological balance. Along with pest management and weed control, planting and saving of trees would be undertaken in a big way to promote the ecological regeneration which is vital for the sustained agricultural advancement. While planting trees, the programme would be organised in such a way that there is not only a general ecological benefit but also an economic and nutritional pay-off. Thus growing of a wide range of fodder and feed plants, fuel trees, minor oilseed plants and plants which can help remedy nutritional imbalances like deficiency of vitamins in rural areas is envisaged. The work of this kind would not be treated as extra-curricular activities and the students would be given full credit for such work. Since the projects can offer opportunities for learning through work experience, these will be given the academic status and recognition they deserve. Dr. Swaminathan wanted the implementation of the programme to be organised in such a way that small university-cum-government sponsored activities could ultimately become mass movements.

### **Varsity Research Station for Tiruchi**

Tamil Nadu Agricultural University had decided to establish a regional integrated agricultural research station cum agricultural polytechnic in Tiruchi. The Kumaraperumal Trust has offered a donation of Rupees twenty two

lakhs for this purpose. The offer has since been accepted. This would serve as a nucleus for the proposed research station.

A high level six-member technical team of the Indian Council of Agricultural Research headed by Prof. N. Gopalakrishna, Vice-Chancellor of Punjabrao Agricultural University, Akola, has visited the 153 acres site. Dr. G. Rangaswami, Vice-Chancellor of Tamil Nadu Agricultural University said that the Aduthurai Agricultural Research Station which was under the control of the agricultural college, Coimbatore, previously was not handed over to the university and it wanted to establish a regional station of its own where integrated concept of research of all crop varieties, viz., animal husbandry, poultry, home science, food processing, etc. could be taken up. The ICAR team has now suggested that this research station be also handed over to the university for further development.

### **Zonal lectures in Andhra University**

The Chemistry Department of Andhra University has launched a programme of zonal lectures as part of the university leadership project in the college science improvement programme sponsored by the University Grants Commission.

Prof. L. Ramachandra Rao, Head of the Department is the Project Coordinator. The first zonal lectures were inaugurated at A.V.N. College where students and teachers from selected colleges participated in lecture, demonstration and practical exercises specially designed for the purpose. The university was divided into eleven zones for this purpose. Each zone will broadly consist of fortyone colleges having Chemistry courses. However this year five zones would be covered and the rest would be taken in the next year. Lectures, laboratory experiments and the corresponding questionnaire and their evaluation formed the core of the programme. Modern subjects

included in the undergraduate curriculum were highlighted in the course of discussion.

### **Institute of Medical Sciences at Patna**

The Government of Bihar is considering a proposal for setting up of an Institute of Medical Sciences for providing research facilities of high order. A sum of rupees five lakhs is expected to be earmarked for the preliminary work. The Infectious Diseases Hospital and Rajendra Memorial Institute of Medical Sciences would provide the basic complex. The proposed institute will have a 250-bed hospital with emergency wards and mobile medical teams. The institute will be provided with the latest equipments of medical sciences and would cater to the postgraduate teaching and training in almost all the specialities.

### **Academic reorganisation in Bhagalpur**

Bhagalpur University would soon regularise the academic sessions by the end of 1976. The university examinations will be conducted regularly on scheduled dates. There will be an all round streamlining of the working of the university. Ways are being devised to complete the assessment of answer books in the shortest possible time. Book banks have been opened in the different faculties and colleges of the university. The central cooperative society has been organised for effecting the supply of essential commodities to students at reasonable prices. The mess charges in different hostels have been reduced considerably. The working hours in the university offices have also been increased in order to dispose of the pending cases.

### **Students Welfare Programmes in Patna**

The University of Patna has recently initiated a number of welfare schemes for students. It is proposed to start subsidised canteens in the colleges for the benefit of students. Book banks

have been opened in almost all the colleges of the university. A central cooperative store has been established in Patna to meet the requirements of the residents of the hostels, members of faculty and other administrative staff of the university. The proctorial system has been introduced in the colleges and in postgraduate departments. Additional hostel accommodation is being planned for students who could not find seats elsewhere.

Under the new scheme of teaching, the Dean of the Faculty would be overall incharge of the faculty and will regulate all academic matters in consultation with the college principals and heads of undergraduate departments. Besides, each teacher will have to prepare the synopsis of his lectures and will send it to the university office regularly.

### Postgraduate training courses in Science and Commerce Education

A conference of educationists, scientists, educational administrators of the States of Maharashtra, Madhya Pradesh, Gujarat and Goa was held in Poona to consider the question of preparation of science and commerce teachers for the new pattern of education. The Regional College of Education, Bhopal had organised the preliminary discussions under the guidance of the University Grants Commission and the National Council of Educational Research and Training.

The two-day conference was presided by Dr. Ravi Prakash, Vice-Chancellor, Bhopal University. Prof. D.A. Dabholkar, Vice-Chancellor of Poona University in his inaugural address said that the problem of education was integrated one. It encompasses various organisations and agencies which work with a sense of dedication towards the object of improving the quality of education. A constructive leadership is required to change the working of educational institutions. An

integrated planning in the field of teacher education is also urgently needed for implementing the new pattern of education. An integrated syllabus is equally necessary at all levels. The teachers have to be involved in this process and in this context intensive teacher's training programme would be necessary for the improvement of standards of education. He supported the idea of school complex as suggested by the Kothari Commission.

Dr. Ravi Prakash in his presidential address emphasized the need for giving utmost attention to the improvement of the laboratory, library and equipment of various institutions in any programme of reform or innovation.

At the conclusion of the conference, the following programme of action was recommended :

- (i) To meet the urgent need of the trained teachers in commerce and science subjects, suitable post-graduate training courses be organised so that the teachers get ample opportunities for their further training.
- (ii) These postgraduate courses may be of at least twelve months' duration leading to the degree of Master of teaching in Science and Commerce.
- (iii) Such courses may be started in all institutions where adequate facilities are available for meeting the shortage of trained and experienced teachers for the +2 pattern of new education.
- (iv) Special MEd. courses for preparing primary school teachers, educators and supervisors may be started.
- (v) Two-year postgraduate courses in Science Education may be started which should be different from the traditional MSc courses. The syllabi for such courses should be framed in consultation with the

science experts from the universities of the State keeping in view the needs of the new pattern of education.

- (vi) Science and commerce education courses be strengthened by providing adequate facilities for research work.

### HAU to advise farmers

The Haryana Agricultural University has initiated a 'village adoption programme'. Under this scheme advisory services are envisaged for five selected villages in each of the eleven districts in the State. The university is also planning to re-orient the extension service in every district with a view to sharing its expertise in various disciplines with the farmers. The experts in different fields of agricultural sciences will give practical demonstrations on the fields and apprise the farmers of the latest agricultural techniques. They will guide the farmers from the stage of selecting the seeds to the harvesting of the crops. Soil tests will be conducted and the required fertilisers would be applied in the presence of the farmers to acquaint them with other details.

### Dhanbad conducts Mine Project Management Course

A short-term course on Mine Project Management was organised at Indian School of Mines, Dhanbad. Shri R.G. Mahendru, Director, CMAL, in his address to the participants emphasised the necessity of having continuing education course in the technical fields. He said it is not only obsolescence of knowledge that one must guard against but it is also the inertia of not adopting new techniques that one has to fight. Because it is not what one known that is important, but it is what one is able to apply in practice. He said that there was a great deal of resistance to change the procedure in mining industry some years ago but the situation has changed radically in recent

years and we have to find ways of applying quickly the new techniques to increase the production, to contain the present price level as well as to reduce the exploitation losses in the mining industry.

The participants of the course came from various premier technical institutions in the country. There were mostly Project Managers and senior mining engineers in the planning departments and a few electrical, mechanical and telecommunication engineers and geologists.

Prof. S.P.Banerjee, Course Coordinator and Professor of Continuing Education gave the genesis of this course. Prof. S. Srinivasan presided over the concluding function.

### Honours Courses planned in Surat

With a view to encourage the talented and motivated students to pursue higher studies, the South Gujarat University has decided to introduce honours degree courses of three-years duration in the faculties of Arts, Commerce and Science. Such courses would be provided in English, Gujarati, Economics, Commerce and Chemistry in the first instance. The academic year would be divided into two semesters and six papers will be covered in each of the semesters making thirty six papers for six semesters over a total period of three academic years. These papers shall be broadly divided into (i) six papers for languages, (ii) six paper of Core subject, (iii) twelve papers for honours subject and (iv) twelve papers for the two ancillary subjects. The whole course will be further distributed semesterwise as follows : (a) one paper in language ; (b) one paper in core subject ; (c) two papers in honours subject and (d) two papers-one each in two ancillary subjects. The detailed syllabi for the honours courses are being prepared under supervision of various committees of experts.

### New Venkateswara Auditorium

Shri B.D. Jatti, Vice-President of India, while declaring open Sri Venkateswara University Auditorium emphasised the need for the development of a national outlook and a national language to forge units in the country. Shri Jatti called upon the students to realise the importance of service to the society. He applauded the progress of the university during the last two decades and appreciated the institution of a variety of courses in arts and science faculties as well as the job oriented courses offered by the university.

Shri J. Venkai Rao, the Andhra Pradesh Chief Minister in his presidential address paid rich tributes to Dr. D. Jaganatha Reddy for getting the auditorium reconstructed within a record period and proposed that it be named after him as a mark of appreciation of his untiring efforts to improve the academic standards of the university during his tenure of six years. The State Government had earlier sanctioned rupees three lakhs to the university towards the compensation for the loss incurred due to the damages caused by devastating fire which broke out about three months ago. The auditorium is centrally situated in the campus with a beautiful hill view as its background. It provides accommodation for 1400 persons. The structure contains special type flyover steel shutters at the hill side to seat another 500 persons in open air galleries. The auditorium has been designed to cater to the culture programmes and events as well as the convocations of the university. The total cost of expenditure is estimated at rupees eighteen lakhs.

### Legal aid planned by Nagpur Varsity

The University of Nagpur established fifty year ago under the leadership of Shri Bipin Krishna Bose, the first Vice-Chancellor of the university has undergone many changes in its

constitutions as well as in its structure. There are 140 colleges with enrolment of 225,000 students as against six colleges with 1150 students in 1923. At present there are 4000 university and college teachers. The work load of the university teachers has nearly doubled.

The Executive Council of the university has recently decided that the Examination work would now onwards include, evaluation, setting of question papers, moderation, random checking of answer books and tabulation of results. No payments whatsoever would be made for invigilating jobs. The university has also reduced the holidays to six weeks in a year. Qualifications for the new teachers have been revised keeping in view the changed situation. They would now be required to possess a doctorate degree in the subject or should have published work of high standing to their credit and should have excellent academic record. The college teachers must possess M.Phil degree of a recognised university. The college and university teachers would be required to acquire the prescribed qualifications within a period of three years.

The university has plans to organise a scheme to educate the masses of their legal rights and obligations, provide free legal aid to the poor and associate the law students in social work. The legal-aid centres will be set up at all places where colleges are having law classes. Every final year student of the university would pay rupees five along with the tuition fee for creating the necessary funds for this scheme.

### Personal

Dr. N. A. Noor Mahomed, senior advocate of the Supreme Court and a prominent member of the Madras Bar, has been appointed Vice-Chancellor of Calicut University.

Dr. Z.U. Khan of the Vallabh-bhai Patel Chest Institute, has been awarded the Von Pirquit Prize for 1975 in recognition of his original research work in clinical allergy and applied immunology.

## **Indian Biologists in New Zealand**

A team of Indian biological scientists would be visiting New Zealand to study various measures to improve the environment of the Gir forest in Gujarat. New Zealand has rich forests and so can afford a good opportunity to the Indian scientists for observing the method to increase the fodder growth without harming the trees. The Wildlife department of Gujarat State has also decided to institute scholarships to study the behaviour of lions and other animals in the sanctuaries. There would be periodic examination of health of these animals and their numbers. The staff working in the sanctuary would also be given special training in the preservation of animals. A wildlife education course for them is also to be instituted at the Dehra Dun Forest Research Institute.

## **Teachers Camp at Dalhousie**

A TEN-DAY training camp was organised at Dalhousie by the Punjab Youth Welfare Department. Seventy college teachers participated. The camp was the first of its kind in the country where teachers were given intensive training in devising ways and means for involving youth in construction activities. Efforts were made to correlate youth activities with the Government and semi-Government agencies working for bridging the existing gap between the educational and social realities. Special training programmes were also arranged in yoga and mass media. Lectures on photography, painting and theatre were also organised. The camp afforded opportunity for involving the youth in constructive national activities.

## **Students to Study Land Records**

THE National Students Union would soon be organising visits to villages in Haryana, Punjab, Rajasthan and Uttar Pradesh to do

preliminary study of land records and agricultural wages. Various measures for bringing the land reforms would also be suggested. Initially a team of six students would be sent to different states and the survey would be made on purely experimental basis. The Union also proposes to institute a student agricultural scheme for using vacant plots in educational institutions for cultivation by students all over the country. This would be the first step to get students practically involved in rural development.

## **UN University Rector assumes Office in Tokyo**

Mr. James M. Hester joined as Rector of UN University in Tokyo. Until 31st August, he was President of New York University a post he had held for more than thirteen years.

At a press conference in Tokyo, the Rector said that the University's initial task was to organise before the end of the year three separate working group meetings on the principal priority areas approved by the University Council last January.

The first group of twenty two experts from all over the world will be meeting to discuss the problems of world hunger. Similar meetings will be convened on human and on the use and management of natural resources in early December. On the basis of the recommendations of these committees it is hoped that a working programme will be chalked out for implementation from the next spring.

Regarding the contributions to the University's Endowment Fund, Mr. Hester said that in addition to \$ 100million pledged by Japan over a Five-year period, contributions had been received from Senegal, Ghana and Sweden. Venezuela has pledged 10 million over a five year period. Bills are also before the United States Congress seeking approval of a substantial contribution.

## **UGC Conducts Workshops**

The University Grants Commission is organising a series of workshops for suggesting ways to improve and revise the current university courses and bringing them nearer to the needs of the society and the students. In all thirty-six workshops would be held in which the university teachers would participate. They will be expected to indicate measures for relating each specific discipline with social reality and provide guidelines for preparation of relevant textbooks, supplementary reading material and teaching aids.

The workshop idea came from panels constituted by the Commission last year to advise it on developing research and teaching in various university disciplines in humanities and social sciences. The panel had recommended a thorough revision and upgrading of the university courses.

## **Public Relations Courses in Madras**

A THREE years degree course in public relations recently instituted by the Madras University was inaugurated by Mr. K.K. Shab, Chancellor of the University. A batch of 40 students has been enrolled for the newly started job-oriented course. The students are mostly from Stella Maris College and Government Arts College.

The Chancellor in his inaugural address said that public relations was a two way traffic. He advised the public relations man to see that there was no "credibility gap" between the firm he represented and the consumer of the company's goods. Nor should public relations mean trying to sell something which was not worth selling. He should never subordinate truth to any compulsion arising from business considerations.

Dr. Chandran S. Devanesan, Vice-Chancellor of North Eastern Hill University also spoke on

the occasion. He suggested that PR graduates could be absorbed in colleges and universities. Lack of proper public relations in the universities and institutions had often been responsible for students unrest. Absence of a dialogue between the academic institutions and the industries had sometime resulted in these institutions remaining as "ivory towers" unaware of the development needs of the country. He hoped that the public relations institute which had come forward to help university run the course and serve as a dynamic link between academic bodies and industries so that higher education could be transformed into one of imparting skills which would enable the graduates get employment or become self employed. Shri N. D. Sundaravadielv, former Vice-Chancellor of the University said that, during the last six years, the university had introduced as many as one hundred and three new courses including thirtyfive job oriented ones. The courses in public relations, book industry, tourism and company secretaryship were made available to colleges and students as well. Mr. G A. Dharmarajan, Secretary of the university students information bureau appealed for support and co-operation of industrialists and businessmen in providing sound practical training to students in the job oriented courses.

### Educational Innovations at BITS

BITS has changed over from the letter grading system with A, B, C, D & F grades—F standing for 'Failure', to a new letter grading system with A, B, C, D & E—E standing for 'Exposed'. The change over from F to the E grade has been a matter of discussion for more than a year among students and teachers and the latest decision has removed the eternal stigma which used to be attached to a failure grade. Students obtaining the lowest grade are no longer compulsorily required to repeat a course. However, students are permitted, on their own option, to

repeat a course in which they have got any of the valid grades A, B, C, D or E. The educational philosophy of the Institute thus interlinks and at the same time distinguishes between performance of a student in a single course and his overall cumulative performance. As a followup, an Academic Counselling Board (ACB) has been created to monitor the progress of a student if he fails to meet the expected standards which are based upon maintaining a certain minimum overall performance, a certain rate of progress in clearing the courses and also obtaining not more than one 'E' grade in a semester. Students coming under the purview of the ACB are required to follow a programme and pace of study as decided by the ACB such as reducing their load and in the extreme situation when they are unable to bring up their performance to the expected standards, they may be required to discontinue.

Responding to the aspirations of outstanding students, certain unusual educational features have been introduced in the recent past. Telescoping from B.E. (Hons.)

to M. E. programmes allow outstanding students to dovetail their B.E. (Hons.) into the M.E. program, in the same discipline, without first having to qualify for the B. E. (Hons.) degree. In the dual degree scheme a student can work for two of the 5-year integrated programs concurrently.

One of the very recent innovations to meet the desire of the students to take courses other than those required for their own program is the introduction of the optional free Electives. A student on his own option may take courses, upto a certain number, for which he is given credit in addition to his normal program. An off-shoot of this is the creation of free elective projects wherein an individual student or a group of students get credit for a project activity in which they have been involved for at least a year. Thus the learning process is taken out of the classroom and academic recognition is given to creative activities of students, encouraging them to develop interdisciplinary skills and abilities that are so essential for tomorrow's leaders. □



"How paradoxical—you want politicians to keep off colleges and still invite me to deliver your convocation address....."

## Southern Vice-Chancellors' meet

A conference of the Vice-Chancellors of the southern universities was held in Madras recently. It was attended by Shri P. Jaganmohan Reddy (Osmania), Shri M. R. Apparao (Andhra), Prof. K.S. Murthy (Sri Venkateswara), Prof. D. Javare Gowda (Mysore), Dr. H. Narasimhiah (Bangalore), Prof. R. S. Krishnan (Kerala), Dr. N.K. Panikker (Cochin), Shri S.V. Chittibabu (Madurai), Shri M.V. Rajagopal (J.N. Technological), Dr. K.A.V. Pandalai (IIT, Madras), Dr. Malcolm S. Adiseshiah (Madras) and Shri R.K. Chhabra, Secretary, University Grants Commission.

The conference discussed the desirability of having common pattern of curriculum and syllabi for the universities of this region. They agreed that the university education at the first degree level should be related to environmental needs and employment preparations of students. As a first step it was suggested that the Vice-Chancellors in each State should agree among themselves to develop common course of studies. Once this was achieved the scheme could be extended to the other regions. Two coordinating agencies were accordingly recommended to be set up to map out the work done in the southern region—one at Madras University for theoretical physics and the other at Madurai University, for biological sciences. The Chairmen and the members of the Boards of Studies in the various subjects were requested to meet periodically at zonal workshops.

The Vice-Chancellors also agreed that common Board of Studies should be established in the beginning for two universities. Madras and Kerala Universities would work for economics at the postgraduate level and Madras and Osmania Universities would develop a common Board of Studies in Urdu, Arabic and Persian.

The conference also recommended that post-formal education programmes be expanded with the assistance of the University Grants Commission and that inter-university cooperation be promoted in the field of correspondence courses. It commended the open access system introduced by the Andhra and Mysore universities enabling even those without formal qualifications to appear for the first-degree examinations.

A regional instrumentation centre, a regional library and a documentation centre were also recommended to be set up to serve the universities of this area. The instrumentation centre could be located at the IIT, Madras with the help of the Department of Science and Technology and the library at Bangalore in collaboration with the Indian Council of Social Science Research.

The conference stressed the need for bringing out post graduate reference books in the regional languages and sought the help of the University Grants Commission for this purpose. The

Chairmen of the universities were encouraged to form planning boards to deal with improvement programmes in the form of orientation courses for teachers in the modernised curricula and evaluation techniques.

An Inter-University Consultative committee would soon be set up in each state to deal with academic and administrative problems of the universities. The universities could form planning boards to prepare a prospective plan for their future development.

With regard to the system of internal assessment for post-graduate courses, it recommended that where university departments run a post-graduate programme which was not duplicated elsewhere, the university could adopt the system fully. Where there were several colleges and university departments engaged in post-graduate courses, the internal assessment should initially be limited to 30-35 percent of the total marks.

The next conference of the Vice-Chancellors will be hosted by the Kerala University and would be held in December, 1976.

## ROHILKHAND UNIVERSITY

134, Civil Lines,  
Bareilly. (U.P.)

## SUGGESTION FOR SEAL AND MOTTO

Suggestions including sketches are invited for the seal and the motto of the newly established University of Rohilkhand, Bareilly. The Jurisdiction of University extends to the districts of Bareilly, Badaun, Bijnor, Moradabad, Pilibhit, Rampur and Shahjahanpur.

A prize of Rs. 500/- will be given for the selected entry.

For details write to the Registrar, University of Rohilkhand, 134, Civil Lines, Bareilly.

REGISTRAR

## CLASSIFIED ADVERTISEMENTS

### SAMBALPUR UNIVERSITY JYOTI VIHAR : BURLA

Advertisement

No. 3192-TDS Dated 15-11-75

Applications in the prescribed form with attested copies of marksheet and certificates of all examinations passed are invited for a post of Lecturer in Humanities (English) in the University College of Engineering, Burla.

#### Essential qualification

At least Second Class Masters Degree in English with 48% marks.

Teaching and research experience will be considered as additional qualifications.

Scale of pay : Rs. 400-40-800-50-950

The post carries C.P.F. benefits and dearness allowance as would be sanctioned by the University from time to time.

Age of retirement : Sixty years

Seven copies of the application form will be supplied from the University office to each candidate in person on cash payment of Rs. 10/- (Rupees ten only). Candidates intending to receive form by post are required to send (a) Crossed Indian Postal Order of Rs. 10/- payable to the Finance Officer, Sambalpur University, Sambalpur. (b) Self addressed envelope (23 x 10 cm) with postage stamps worth Rs. 2/- affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN THE SAMBALPUR UNIVERSITY" superscribed. Money Order, Cheque or Bank Draft will not be entertained.

The last date of receipt of application by the undersigned is 18.12.75

Candidates will be required to appear before a Selection Committee appointed by the University at their own expenses. Selected Candidates will be required to join the post within one month from the date of issue of appointment order.

Issue of this advertisement does not make it binding on the part of the University to make appointment.

All communications should be addressed to the undersigned by designation and not by name. No interim reply to any query shall be given.

REGISTRAR

### CAUHATI UNIVERSITY GAUHATI—781014.

Advertisement No 13 of 1975

APPLICATIONS are invited for the following posts :—

1 Professor of Mathematics—one post (permanent)

2 Reader in History—one post (permanent)

Specialisation in Medieval and Modern History of India; preference will be given to one having research experience in the History of Assam.

3. Reader in English—one post (permanent)  
Specialisation to be stated by the candidate.
  4. Reader in Bengali—one post (permanent)  
Specialisation-Language/literature.
  5. Reader in Economics—one post (permanent)  
Specialisation : Economic Theory/Monetary Economics/Economics of Development.
  6. Lecturer in Assamese : two posts (permanent)  
Specialisation-For one post candidate must have a first or high Second Class (B+) M.A. degree in English with a Ph.D. Degree preferably in a subject connected with Assamese literature and for the other candidate must have a first or high Second Class (H+) M.A. in Assamese or Ancient Indian History and Culture with a Ph.D. degree or a First Class M.A. in Assamese with specialisation in Cultural History
  7. Lecturer in Sanskrit—one post (temporary)  
Specialisation-Darsana
  8. Lecturer in Method of teaching English—one post (permanent)  
Diploma in teaching of English from the C.I.E. and F.L. Hyderabad or equivalent degree or diploma recognised by this University
  9. Lecturer in History—two post (permanent)  
Specialisation : for one post Modern History with Social & Economic History of Indian and for the other Medieval History of India.
  10. Lecturer in Political Science—one post (temporary)  
Specialisation - Public Administration, Govt. and Politics in India.
  11. Lecturer in Journalism—one post (temporary)  
Preference will be given to one who has (1) practical experience in daily news papers in the editorial and/or production side for not less than 5 years and (2) teaching experience.
  12. Lecturer in Economics—one post (permanent)  
Specialisation : Public Economics Banking
  13. Lecturer in Philosophy—one post (permanent)  
Specialisation : Philosophy of Religion or Logic.
  14. Lecturer in Mathematics—Two posts (one permanent and the other temporary)  
Specialisation - FOR THE PERMANENT POST-Fluid Mechanics (Turbulence) / Numerical Analysis/Relativity.  
FOR THE TEMPORARY POST- Functional Analysis/Modern Algebra/Topology with ability to teach Riemannian Geometry.
  15. Lecturer in Zoology—one post (temporary)
- Specialisation-Cell Biology.  
16. Lecturer in Commerce—two posts (permanent)  
Specialisation-A degree in Law or competence to teach Corporate Law and Administration.
17. Lecturer in Agricultural Botany—one post (permanent)  
Specialisation-Genetics and Plant breeding.
18. Lecturer in Bengali—one post (permanent)  
Specialisation-Literature.
- Scale of pay :-  
Professor Rs. 1100-50-1300-60-1600/-  
Reader Rs. 700-50-1250/-  
Lecturer Rs. 400-40-800-50-950/-  
The scales of pay are subject to revision.
- All posts carry usual allowances admissible under the University rules in force from time to time and the incumbents will be eligible to pension-cum-G.P.F-cum-Gratuity or Contributory Provident Fund as per relevant statutes of the University.
- Essential qualification :**
- For Professor :** (1) Candidate must be recognised scholar in the subject with Doctor's degree or equivalent published work (2) Continuous research work of merit as evidenced by published papers in standard journals or published work of merit. (3) 10 (ten) year's post-graduate or 15 (fifteen) years Honours teaching experience (4) Experience in guiding and promoting research.
- In case of a candidate of exceptional abilities with outstanding research contributions, the requirement of teaching experience may be suitably relaxed.
- For Readers :** In addition to the specialisations mentioned against each candidates must have (1) A doctorate degree or published work of an equivalent high Standard (2) Consistently good academic record with First or High Second Class (B+) Master's degree in a relevant subject or any equivalent degree of a foreign University (3) Evidence of continuous research and (4) experience of 5 years, post-graduate teaching or 8 years' Honours teaching.
- For Lecturers :** In addition to the specialisations mentioned against each post candidate must possess (a) a Doctorate degree or published work of an equally high standard (b) consistently good academic record with First or High Second class (B+) Master's degree in a relevant subject or an equivalent degree of a foreign University.
- In the case of a candidate whose research work as evident either from his thesis or from his published work is of a high standard, the qualification under (b) may be suitably relaxed.
- If a candidate possessing a Doctor's degree or equivalent published work is not available or is not considered suitable, a person possessing a consistently good academic record (due weightage

being given to M. Phil or equivalent degree or research work of quality) may be considered for appointment on condition that he will have to obtain a Doctor's degree or give evidence of published work of equivalent "high standard" within five years of his appointment, failing which he will not be able to earn future increments until he fulfills these requirements."

**THE LAST DATE OF RECEIVING APPLICATIONS FOR LECTURERS IS EXTENDED TILL 25th DECEMBER, 1975.**

Applications in plain paper in quadruplicate in the case of Professor and Readers and triplicate in the case of Lecturers giving full bio-data including (1) Name in full (in block letters) (2) Father's name (3) Date of birth by the Christian era (4) (a) Permanent residence and address (in full) (b) Present address (in full) (5) Present occupation if any and name of employer (6) Present salary drawn (if any) (7) Detailed academic career with mark-sheets and subjects studied (including Honours) in degree and post graduate courses from Matriculation 'Higher Secondary' High School Leaving Certificate Examination onwards and copies/reprints of research contributions (8) Name and address of two referees not related to the candidate together with an application fee of Rs. 5/- (Rupees Five) by CROSSED INDIAN POSTAL ORDER drawn in favour of the Gauhati University payable at Gauhati-781014 Post Office should be sent in an inner sealed cover superscribed "Application for Post of (Name of the post applied for) Advertisement No. 13 of 1975" enclosed in an outer cover addressed to Shri K.C. Bhattacharyya, M.A., Registrar, Gauhati University, Gauhati 781014 to reach him not later than 15th December, 1975.

Adhoc Professors and Readers in the Departments of this University are required to submit four copies of their bio-data for consideration

The number of this advertisement and name of the post applied for must be referred to in the application. Persons in employment should apply through proper channel or with a no objection certificate from the present employer.

Candidate will be required to appear at an interview if an when called for.

**ALIGARH MUSLIM UNIVERSITY  
Advertisement No. 15/75-76**

APPLICATIONS, on the prescribed form, are invited for the following posts:

1. Reader in Mathematics, Z. H. Engineering College.  
Scale Rs. 1200-1900 plus allowances. (Post temporary).

Qualifications:  
(a) A first or high second class Master's Degree of an Indian University or an equivalent qualification.

(b) Ordinarily a Research Degree of doctorate standard or published work of a high standard.

(c) Ordinarily 5 years' experience of post-graduate teaching or guiding research or of teaching degree classes in Engineering.

Desirable:

Specialisation in one of the following: Hydromechanics; Numerical Analysis; Differential Equations

2. Lecturer in Mathematics, Z. H. Engineering College.

Scale Rs. 700-1600 plus allowances (Post temporary).

Qualifications:

First or high Second class Master's Degree in Mathematics/Statistics or an equivalent qualification.

Desirable:

Experience of teaching or Research Note: Preference to be given to those who have specialised in Applied Mathematics.

3. Reader in Physics, Department of Physics. Scale Rs. 1200-1900 plus allowances.

Qualifications ordinarily required:

A first or high second class Master's Degree in Physics of an Indian University or an equivalent foreign qualification. A research degree of doctorate standard or published work of high standard. At least five years' experience of teaching Post-graduate classes and some experience of guiding research.

Desirable:

Specialisation in the field of solid state electronics, or any other experimental branch of physics which involves instrumentation and electronics at the research level.

Note: Those who have already applied need not apply again.

4. Reader in Civil Engineering (Temporary). Scale Rs. 1200-1900 plus allowances

Qualifications:

Basic degree in Civil Engineering and seven years' experience or Master's degree in Civil Engineering, with five year's experience or doctorate with two years' experience of which two years should be in teaching in an Engineering Institution of a degree standard and/or Research.

Desirable:

Preference will be given to those possessing Post-graduate qualification and experience Published Research Work.

5. Lecturers in Civil Engineering—(One permanent, five temporary). Scale Rs. 700-1600 plus allowances.

Qualifications:

Ordinarily first class Bachelor's degree in Civil Engineering or Post-graduate qualifications in Civil Engineering.

6. Lecturer in Civil Engineering, University Polytechnic. Scale Rs. 700-1600 plus allowances (Post temporary, likely to become permanent).

Qualifications:

Ordinarily atleast a second class Bachelor's Degree in Civil Engineering or its equivalent.

7. Lecturers. Scale Rs. 700-90-1100-30-1600 plus allowances.

1. Lecturer in Economics

2. Lecturer in Geology

3. Lecturer in Statistics (History Department)

4. Lecturer in Russian History (History Department)

Qualifications for the posts at Sl. Nos 1 & 2:

Essential: Consistently good academic record with first or high second class (B+) Master's Degree in the subject concerned or an equivalent Degree of a foreign University.

Desirable:

(i) A Doctor's Degree or published work of an equally high standard.

(ii) Teaching experience of Degree/Post-graduate classes.

Qualifications for the post at Sl. No. 3:

Essential: Consistently good academic record with first or high second class (B+) Master's Degree (or an equivalent degree of a foreign University) in.

(i) Statistics or Mathematics with Diploma in Statistics OR (ii) Economics with specialisation in econometrics.

Candidates should have some knowledge of history and experience of handling historical statistics

Desirable:

(i) A Doctor's Degree or published work of an equally high standard.

(ii) Teaching experience of degree/post-graduate classes; (iii) M.A. in History.

Qualifications for the post at Sl. No. 4:

Essential: Consistently good academic record with first or high second class (B+) Master's Degree in Russian History, or history with specialisation in History of Europe (including USSR), or an equivalent Degree of a foreign University

Desirable:

(i) A Doctor's Degree or published work of an equally high standard

(ii) Teaching experience of degree/post-graduate classes

(iii) Some experience of research in Russian History (e.g. M.Phil. Degree in Russian History)

(iv) Working knowledge of Russian.

For all posts at Sl. No. 7

"Provided that if a teacher is not a Ph.D. at the time of his/her appointment and does not qualify himself/herself for the award of a Ph.D. Degree from a recognized University in the subject which is being taught by him/her within the period of five years from the date of his/her appointment or does not give evidence of research work of equal standard within that period in the subject concerned, he/she shall not be entitled to any future increment after the expiry of the said period of five years till such time he/she fulfills the above mentioned requirements."

Prescribed application forms and instructions may be had from the Deputy Registrar (Executive) by sending self-addressed envelope of 23 x 10 cm. Last date for receipt of applications is 15th December, 1975. Incomplete applications and those received late may not be considered.

Higher start may be given for special qualifications and experience. Candidates interviewed may be paid contribution

towards their T.A. equal to one single  
second class Railway fare only.

(P. V. GEORGE)  
REGISTRAR

SAMBALPUR UNIVERSITY  
Jyoti Vihar: Barla  
Advertisement

No. 32096-TDS Dated the 17-11-75

IN continuation of this office advertisement No. 29156 dated 29.9.75, the last date of receipt of applications in the prescribed form for the Post of Professor-cum-Principal in the Lajpat Rai Law College at Sambalpur is extended upto 15.12.1975.

I. Scale of pay Rs 1100-50-1300-60-1600.

II. Age of retirement: Sixty years of age

III. Qualification and Experience:

Essential Qualification:

(a) M.L. or LL.M. or Bar-at-Law Degree or equivalent qualification

(b) Must have fifteen years of professional experience out of which at least five years must be in teaching Law or fifteen years of teaching experience in Law.

Desirable Qualification:

(a) Higher research qualification preferably a Doctorate Degree

(b) Administrative experience will be considered as an additional qualification

A Professor-cum-Principal may also be appointed on contract basis for a specified period. Retired persons may also apply. Higher starting may be given in deserving cases. The post carries usual dearness allowance as would be conditioned by the University from time to time.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs 10/- (Rupees Ten) only. Candidates intending to receive forms by post are required to send (a) Crossed Postal Order of Rs 10/- payable to the Finance Officer, Sambalpur University, Barla (b) a self addressed envelope (23 cm x 10 cm) with postage stamps worth Rs 2/- affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money Order Cheque will not be entertained.

The candidates will be required to appear for an interview before a selection committee at their own expense.

All communications should be addressed to the Registrar, by designation only.

Candidates who have applied in response to the earlier advertisement need not apply again.

G. P. GURU  
REGISTRAR

CENTRAL INSTITUTE OF  
EDUCATION

APPLICATIONS are invited for four posts of Readers in the Central Institute of Education (a Post-Graduate maintained institution of the Delhi University) in the grade of Rs 1200-50-1300-60-1900. Dearness, City Compensatory allowances and retirement benefits (in the case of permanent incumbents) are admissible in accordance with the University rules in force from time to time.

Essential Qualifications:

Consistently Good academic record with first or high second Class Master's Degree in Education with a Doctorate Degree or equivalent published work. Independent published work (in addition to the published work mentioned above) with at least 5 years' teaching experience in Honours Post-Graduate Classes essential.

Special Desirable Qualifications:

(1) The candidates should have specialized in one of the following areas: Educational Administration; Educational Sociology; Educational Psychology; Educational Technology; Philosophy of Education; Comparative Education; Educational Planning and Finance of Education; Principles of Curriculum Construction; Teacher Education; Special Education; Educational and Vocational Guidance.

(2) Experience in guiding Ph.D students in Education.

The prescribed application form can be had from the Office of the Central Institute of Education either personally or by sending a self addressed envelope with postage stamps worth Rs. 1.95.

Selected candidates will have to produce the original documents relating to their age, qualifications, experience etc before joining the appointment.

Application accompanied by attested copies of the Degrees and other certificates and published research articles etc. should reach the undersigned not later than 24th December, 1975.

Note:

1. It will be open to the University to consider the names of suitable candidates who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases on the recommendations of the Selection Committee.
2. Canvassing in any form by or on behalf of the candidate will disqualify.
3. Candidates called for interview from outside Delhi will be paid contribution towards Travel expenses equivalent to 1<sup>st</sup> Second Class Rail fare as per rules.

PRINCIPAL

Central Institute of Education  
33, Chhatra Marg, Delhi-110007.

SHIVAJI UNIVERSITY, KOLHAPUR  
Advertisement

APPLICATIONS are invited for the following posts:

Professor of History,  
Reader in English.

A Lecturer each in Zoology (Bio-Chemistry), Chemistry (Organic), Mathematics (Statistics) and Two Lecturers each in English and Physic (Theoretical Physics Solid State Physics or Electronics).

Pay Scales:

Professor: Rs. 1100-50-1300-60-1600.  
Reader: Rs. 700-50-1250

Lecturer: Rs. 400-40-800-50-950

Qualifications & Experience:

(1) Professor: First or Second Class Master's Degree and Doctorate Degree in the subject of a statutory Indian or Foreign University of repute

Teaching Post-Graduate classes for about ten years and guiding successfully some Ph.D. students. Published research work of merit will receive due consideration.

(2) Reader:

(a) A Doctorate Degree of any recognised University Indian or Foreign with at least Second Class either at Bachelor's or Master's Degree and published independent research work

(b) Seven years experience of teaching Post-Graduate classes. (This condition will be relaxed in exceptional cases for the subject of English only).

(3) Lecturer:

(a) A First or Second Class Master's Degree. OR

(a) A Doctorate Degree with at least Second Class Bachelor's Degree

OR

(a) Any other equivalent Degree or Degrees of an Indian or Foreign University

AND

(b) Five year's experience of teaching Graduate classes at the special or Principal level or at Post-Graduate level.

(c) Preference will be given to candidates belonging to Schedule Caste, Schedule Tribes, Nomadic Tribes & O.B.C.

Prescribed application forms (Seven copies), can be had from University office. Desirous candidates are requested to send Indian Postal Order of Rs. 3.50 alongwith self-addressed envelope of 00.65 ps.

Seven copies of applications alongwith necessary enclosures should reach the Registrar, Shivaji University, Vidyanagar, Kolhapur-416004, on or before 31st December, 1975.

Kolhapur.

Date :—22-11-1975.

USHAITHAPE

REGISTRAR

## CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from Periodicals received in AIU Library during November 1975

### EDUCATIONAL PHILOSOPHY

- Dresch, Stephen P. "Research, graduate education, and the university". *Educational Record* 55 (3); Summer 74: 171-82.  
Haffner, Gerald O. "American universities : A question of values and a matter of conscience". *International Association of Universities Bulletin* 23 (2); May 75: 97-100.

### EDUCATIONAL PSYCHOLOGY

- Crewe, Ivor. "why writing it down is the scholars dilemma". *Times Higher Education Supplement* (207); 10 Oct 75: 5.  
Pandya, Kulin "Creativity in education". *University Journal* (South Gujarat, University, Surat) 2 & 3; 71-74: 97-108.

### EDUCATIONAL SOCIOLOGY

- Adeniran, Tunde. "Youth culture in transition : Nigerian youths in the 1970s". *Youth and society* 6 (4); June 75: 481-94.  
"Arm of law reaches school drop-outs and truants in Philippines". *I.I.E.E. Bulletin* Sept-Oct 75: 5-6.  
DeMartini, Joseph R. "Student activists of the 1930s and 1960s. A comparison of the social base of two students". *moments Youth and Society* 6 (4); June 75: 395-422.  
Meyars, Edward M. and Fink, Ira Stephen. "Universities and communities: Planning together for a change". *Educational Record* 55 (3); Summer 74: 193-9.

### EDUCATIONAL PLANNING

- Moore, Michael A. "Defining and planning for the steady state". *Educational Record* 56 (2); Spring 75: 100-10.  
Satish Chandra. "Higher education in India: Plans and prospects". *Journal of Higher Education* (Delhi) 1 (1); Monsoon 75: 5-13.  
Young, Walter. "Proposals for planning too time consuming". *University Affairs* (Ottawa) 16 (6); July 75: 6-7.

### EDUCATIONAL ADMINISTRATION

- Dunworth, John and Cook, Rupert. "University teaching accommodation: Its use and allocation". *Higher Education Review* 7 (2); Spring 75: 59-76.  
Pratt, John. "UGC Department". *Higher Education Review* 7 (2); Spring 75: 19-32.  
Sullivan, Nancy. "And who shall enter?". *University Affairs* (Ottawa) 16 (8); Oct 75: 8-10.

### CURRICULUM

- Shackleton, J. R. "Economics for non-specialists". *Higher Education Review* 7(2); Spring 75: 33-41.

### TEACHING

- Bonche, David. "Staff and students 'incapable of thinking for themselves'". *Times Higher Education Supplement* (209); 24 Oct 75: 7.  
"Varsity and youth programmes: A BITS view point". *University News* 13 (11); Nov. 75: 4-6.

### EVALUATION

- "Confidentiality and anonymity of assessment". 13 (2); Summer 75: 135-51.  
Goldman, Roy D. and Hewitt, Barbara Newlin. "Adaptation-level as an explanation for differential standards in college grading". *Journal of Educational Measurement* 12 (3); Fall 75: 149-61.

Grier, J. Brown. "Number of alternatives for optimum test reliability". *Journal of Educational Measurement* 12 (2); Summer 75: 109-14.

Hales, Leyde W. and Tokar, Edward. "Effect of the quality of preceding responses to an essay question". *Journal of Educational Measurement* 12 (2); 75: 115-8.

Hanna, Gerald S. "Incremental reliability and validity of multiple-choice tests with an answer-until-correct procedure". *Journal of Educational Measurement* 12 (3); Fall 75: 175-8.

Mider, Jerry W. "Credit for non-traditional education: A conceptual framework for recognition". *Educational Record* Summer 55 (3); 74: 188-92.

Parihar, P.S. "Credibility of public examinations." *Mainstream* 14 (9); 1 Nov. 75: 31-3.

Robinson, Eric "How to assess a lecturer's incompetence". *Times Higher Education Supplement* (209); 24 Oct. 75: 5.

### ECONOMICS OF EDUCATION

Buttrick, John. "Who should pay for universities?". *University Affairs* (Ottawa) 16 (6); July 75: 28.

Morris, Alfred. "Separate funding of university teaching and research". *Higher Education Review* 7 (2); Spring 75: 42-58.

Panchamukhi, P.R. "Devaluation of education. A quantitative analysis". *Journal of Higher Education* (Delhi) 1 (1); Monsoon 75: 15-30.

### EDUCATIONAL TECHNOLOGY

Mehrotra, R.C. "New educational technology and the teaching of chemistry". *Journal of Higher Education* (Delhi) 1 (1); Monsoons 75: 31-42.

### ADULT EDUCATION

Amrit Kaur. "Role of school and college students in eradication of illiteracy". *Indian Journal of Adult Education* 36 (6); June 75: 15-16.

Shah, Gunvant B. "Correspondence education". *University Journal* (South Gujarat University, Surat) 2 & 3; 73-74: 109-11.

Waniewicz, Ignacy. "Educational potentialities and limitations of radio and television". *Indian Journal of Adult Education* 36 (6); June 75: 2-7.

### COMPARATIVE EDUCATION & COUNTRY STUDIES

Amarik Singh. "Problems of Post-graduate education". *University News* 13(11); Nov 75: 7-10.

Domes, Jurgen and Frank, Armin Paul. "Tribulations of the Free University of Berlin". *Minerva* 13(2); Summer 75: 183-99.

Kloss, Gunther. "Open university gets underway—(West Germany)". *Times Higher Education Supplement* (207); 10 Oct 75: 15.

"Language problem hits Singapore students". *I.I.E.E. Bulletin* Sept-Oct 75: 10.

Patel, V. J. "Attitude of students towards education". *Mainstream* 14(7); 18 Oct 75: 31-4.

Reed, Howard A. "Hacettepe and Middle East technical universities : New universities in Turkey". *Minerva* 13(2); Summer 75: 200-35.

Tarnason, Richard F. "Radical restructuring of higher education in Sweden". *Educational Record* 56(2); Spring 75: 78-88.

Zhdanov, U. "Regional co-operation in higher education in the U.S.S.R.". *International Association of Universities Bulletin* 23(2); May 75: 90-2.

# THESES OF THE MONTH

## A List of Doctoral Theses Accepted by Indian Universities

### PHYSICAL SCIENCES

#### Mathematics

1. Choudhari, Manohar Shankarrao. Topological and distributional aspects of Laplace-Hankel transformation and its application. Marathwada University.

2. Gautam, Lokesh Prasad. Problems on convergence and summability. Awadhesh Pratap Singh University.

3. Patel, Sharandas Mandhai. Contributions to the study of spectraloid operators. University of Delhi.

#### Operational Research

1. Sehwney, Sudesh. Reliability models in operational research. University of Delhi.

#### Physics

1. Agnihotri, S.A. Electronic and vibrational spectra of aromatic molecules. University of Bombay.

2. Ahuja, Ramesh Chandra. Investigations of the photo-electro and electrophotographic characteristics of  $Hg I_x : CdS$  binder layers. I.I.T., Delhi.

3. Bhattacharyya, Ramendranarayanan. Electric and magnetic properties of natural graphite crystals. University of Calcutta.

4. Bhima Sankaram, T. Study of defects in crystals. Osmania University.

5. Kalra, Manohar Lal. A theoretical study of metal, non metal transition in oxides of transition metals. University Udaipur.

6. Mahajan, C.G. Vacuum ultraviolet absorption spectra of  $S_2$ ,  $CS_2$  and  $SO_2$ . University of Bombay.

7. Namjoshi, L.V. Elastic scattering of alpha particles from  $^{26}Mg$  in the range of 4.18 to 5.14 MeV. University of Bombay.

8. Parthasarathi, V. Some applications of probability methods in X-ray crystallography. University of Madras.

9. Ranganathan, Dilip. Pulse propagation through a medium of two level atoms. I.I.T., Delhi.

10. Thakur, Mishree Lal. Some relevant studies on transport processes in a thermocouple and other systems. Bhagalpur University.

11. Vinod Kumar. Studies of ionospheric drifts and irregularities at low latitudes. University of Udaipur.

#### Chemistry

1. Balakrishnan, T. Reaction Kinetics in solution : Kinetics of oxidation of some oximes by  $Tl$  (III) acetate. University of Madras.

2. Dighe, S.S. Chemical investigation on *Aeginetia* media (Linn.). University of Bombay.

3. Gupta Sukumar. Organic acid complexes of trivalent metal ions. University of Calcutta.

4. Jayaraman, B. Electron transfer radical mechanisms of some organic reactions. I.I.T., Kanpur.

5. Karve, M.V. Studies in sesquiterpenic lactones. University of Bombay.

6. Madhusudhana Rao, Janaswamy. Flavonoid constituents of *Flemiaga wallichii* and *Flemiaga stricta* (Roxb.) and chemical examination of *Hamelia patens*. Andhra University.

7. Nigam, Alok. Novel electron transfer processes in organic reactions. I.I.T., Kanpur.

8. Pandey, G.S. Studies of metal complexes of 2-thiocorotic acid. I.I.T., Kanpur.

9. Parekh, H.H. Studies on optical activity. Saurashtra University.

10. Sarma, Prabin Chandra. Studies on sulphenyl derivatives of some orthomercapto-azo-compounds. University of Gauhati.

11. Tripathi, Manoj Kumar. Chemical examination of some essential and fixed oils. University of Saugar.

12. Varma, Rajender Singh. Phytochemical study of some leguminous plants and *Callistemon lanceolatus*. University of Delhi.

#### Engineering & Technology

1. Agarwal, Radhey Shyam. Vapour-liquid equilibrium and thermodynamic properties of fluorocarbon mixtures using Redlich-Kwang equation of state. I.I.T., Delhi.

2. Majumdar, S. Reaction kinetics in the system  $Zr(HF)_x \cdot NaCl$ . I.I.T., Kanpur.

3. Mishra, Girish Chandra. Kinetics of oxidation of ammonium sulfite. I.I.T., Kanpur.

4. Ramakrishna Rao, P. Modelling of non-linear behaviour of drainage basins. I.I.T., Delhi.

5. Shinde, Maruti Pandurang. A new model of HF impulsive atmospheric noise : Application to digital communication systems. I.I.T., Delhi.

6. Subramanian, M.G. Simulation and control of a pressurized heavy water reactor. I.I.T., Kanpur.

7. Vaishnavi, V.K. A class of formal models for language and translations. I.I.T., Kanpur.

#### Earth Sciences

1. Panda, Pramode K. Some investigations on terrestrial heat flow and their relevance to geophysical fields. Indian School of Mines, Dhanbad.

2. Subba Rao, Yalamanchilivenkata. Some geological and geophysical investigations around Karimnagar Town. Andhra Pradesh. Andhra University.

### BIOLOGICAL SCIENCES

#### Biochemistry

1. Avasarala, Mohana Rao. Studies on hemicellulose metabolism by rumen micro-organisms. Punjab Agricultural University.

2. Goswami, Biswendubikash. Protein synthesis in vitro system in mitochondria from different sources. University of Calcutta.

3. Narinder Kaur. Production and use of phospholipids as antioxidants in ghee. Punjab Agricultural University.

4. Pardip Kumar. Metabolism of phenolic acids in laboratory animals. Punjab Agricultural University.

5. Ranganathan, G. Some aspects of protein metabolism in health and disease. University of Madras.

6. Soman, G. Studies on L-glucan phosphorylase. University of Kerala.

#### Microbiology

1. Lonsane, B.K. Studies on isolation, characterization and growth of microorganisms utilizing petroleum hydrocarbons. University of Gauhati.

2. Romesh Kumar. Studies on the fungal cellulases in relation to hydrolysis of native cellulose. Punjab Agricultural University.

1. Bhattacharya, Bhupendra Ray. *Cytogenetic of gamma-ray induced mutagenesis in two varieties of grain amaranth*. Andhra University.

2. Bhattacharya, Jyotirmoy. *Detective microscopic and physical characters of poisonous angiospermic seeds having forensic significance*. University of Calcutta.

3. Majumder, Tushar Kanti. *Genetical studies in jute and related species*. University of Burdwan.

4. Pushkaran, M. *Candidum ostogamy in some phialidic hyphomycetes*. University of Madras.

5. Sheoran, Inder Singh. *Effect of salinity on some important aspect of plant metabolism*. Haryana Agricultural University.

6. Srivastava, G.P. *Some studies in pollination ecology of cucurbitaceae*. Awadhesh Pratap Singh University.

#### Zoology

1. Devanesan, Ruby. *Siphonophora of the Indian ocean*. University of Madras.

2. Narayana Rao, N. *Studies on the genetics of drosophila*. University of Madras.

3. Neelgund, Y.F. *Studies on the nuclear polyhedrosis of the army-worm Mythimna (Pseudalecia) separata (Walker)*. Karnataka University.

4. Sharma, L.P. *Studies on the cytology of developing germ cells in the order echinostomatida (Le Rue, 1957), trematoda, digenes*. Awadhesh Pratap Singh University.

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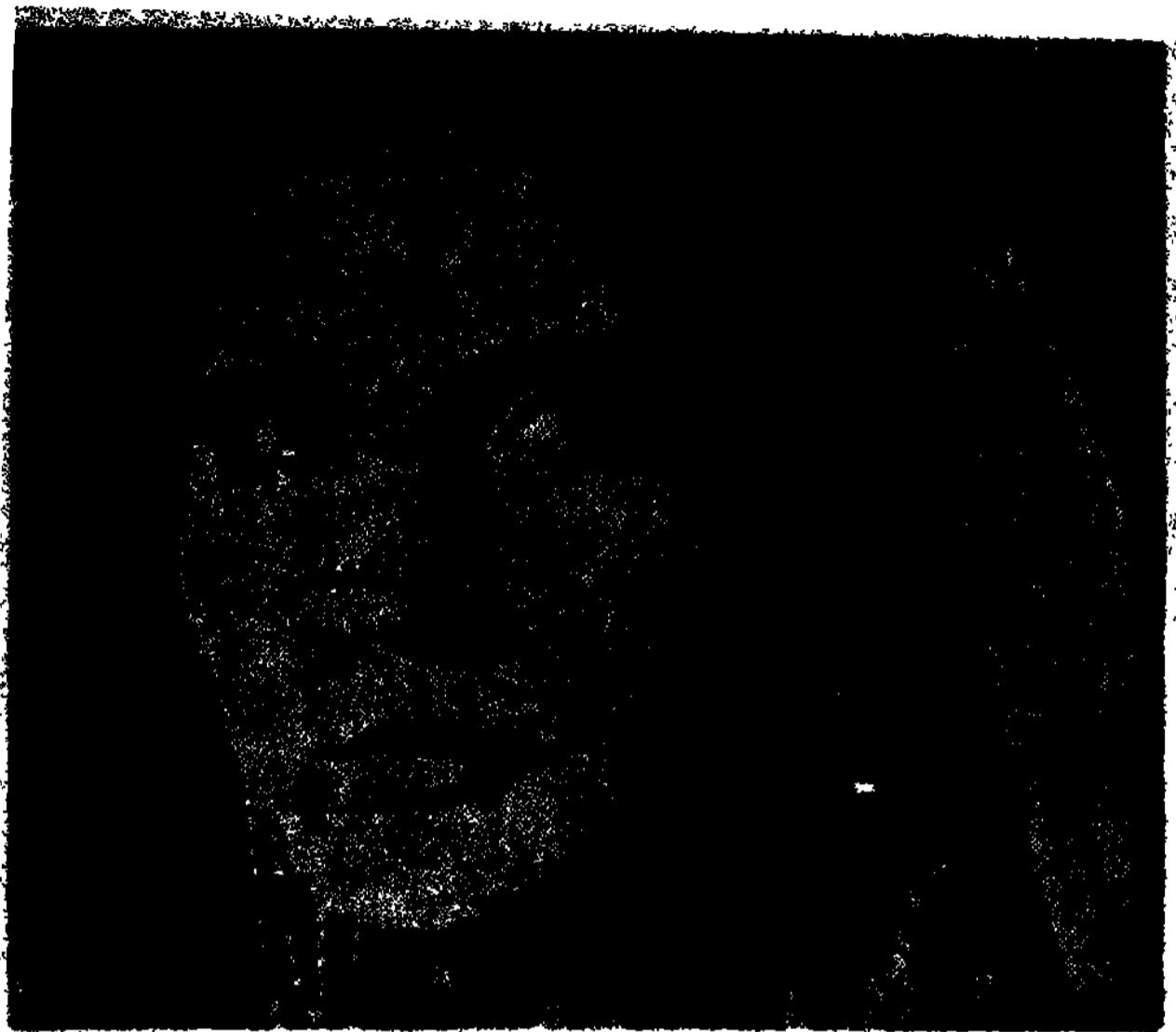
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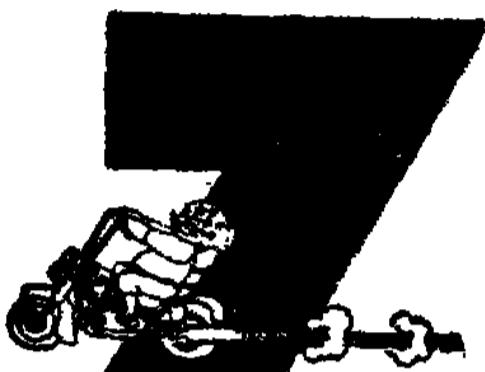


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